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Develops Grain Flow Control

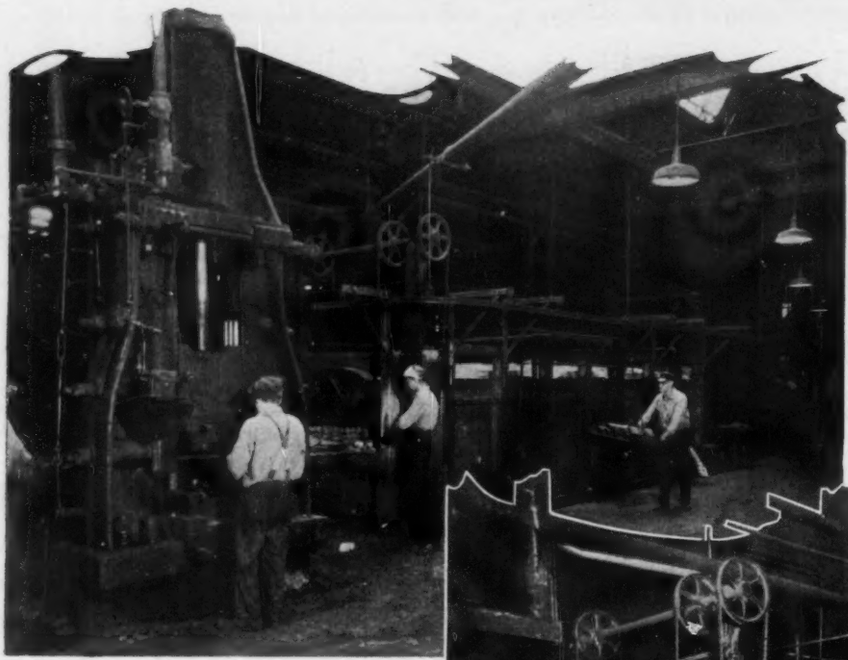
Maximum Strength Obtained from Forgings When Lines of Flow of Metal Follow Shape of Part—Heating the Stock Properly Is Important Factor

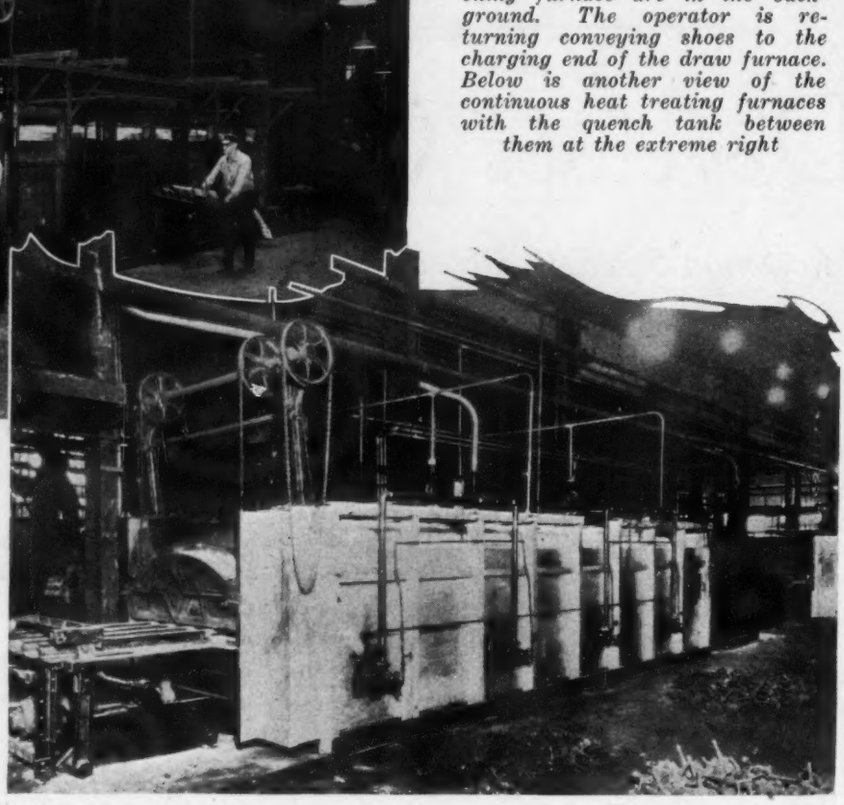
By J. B. Nealey

ONE of the achievements in the heat treating of steel, brought about by the demands of the automotive industry, is grain growth control, but a more recent development, induced by the still more exacting requirements of the aircraft industry, is that of grain flow control. The lines that the grains of metal forgings follow are determined during the forging operation, and the response of the drop forging industry, through a few pioneers, to the insistent demands of airplane builders for more strength and less weight has produced a technique in grain flow control resulting in the elimination of many weak points in forgings.

A pioneer in this field, employing engineering and laboratory research extensively and successfully, is the Champion Machine & Forging Co., Cleveland, manufacturing a general line of automotive and aircraft drop forgings. This company

HAMMER crews engaged in forging steering knuckles. At the left of the illustration is a slot-type gas-fired furnace in which the stock is heated. Inset shows the grain flow in a properly forged crankshaft, brought out by sectioning and etching in acid





DISCHARGE end of draw furnace and hammer in which forgings are restruck in drawing heat are shown at the left. The quench tank and hardening furnace are in the background. The operator is returning conveying shoes to the charging end of the draw furnace. Below is another view of the continuous heat treating furnaces with the quench tank between them at the extreme right

early recognized that the grain of the metal must follow uniformly the shape of the forging, for if the grain is allowed to run directly toward depressions in the machined forging, lines of weakness are created and those lines will ultimately become starting points for failures. The answer to this was found in directing the flow of the metal under the hammers.

When an order for a newly designed forging is received by this company, engineers carefully study the direction of the stresses. They then work with the hammer men to regulate the grain flow in such directions as to obtain maximum strength. Sample forgings then are submitted to the laboratory where every test is applied and results accurately determined. Grain flow is ascertained by cutting sections and etching with acid, presenting a picture for further study, such as shown in an accompanying illustration.

Crankshaft Is Example

An instance of this technique is a crankshaft forged from a steel billet. The lines of the grain flow in these billets, due to the working they have received in the steel mill, follow the longitudinal axis and are concentric about the center. This is the ideal condition of grain flow. In the process of forging care must be exercised that these lines shall follow each throw and not "run out" to the surface, especially at points of depression. Even though the finished cranks measure up to standard in chemical analysis, grain structure and physical properties, the possibility is always present that these weak points will open slightly and in course of constant use progress far enough to cause failure of the forging as a whole.

Crankshaft forgings made by the Champion company are formed with an extra press operation which rounds out the throws gently, to the shape desired, so as to preserve carefully the original grain flow. Hammer men are trained to exert great care in placing stock in the dies so that no detrimental rearrangement of this flow results.

Another good example of grain flow control is a gear blank forged from bar stock. The practice is to cut off the end of the bar to the proper weight, and then drop forge to a pancake of the proper thickness, always taking care, in this case, that the bar section is upright in the die so that it is upset in the hammer along its long axis. This causes the lines of grain flow to assume a radial direction starting from the center and flowing outward through the tooth section, affording the strongest construction possible for the gear teeth.

Forging at right angles to the long axis of the stock causes the lines of grain flow to follow one direction and this flow crosses directly many of the teeth when they are cut, and angles across many more. Thus the lines "run out" at both surfaces of the teeth, weakening their structure materially. However, forging so as to upset the stock along its long axis causes the grain lines to radiate from the center out in all directions and to follow through each and every tooth.

Heating Is Important Phase

Heating the stock prior to forging is as important as any other phase in its production. It must be heated hot enough to flow under the hammers and yet not so hot as to burn. It must be heated in a slightly reducing atmosphere to reduce scaling to a minimum. Gas is used in both the forging and heat treating furnaces.

One type of gas-fired billet heating furnace employed in this plant has a side door discharge, operated by a foot treadle, and uses a mechanical pusher equipped with a time clock for its regular and continuous operation. This furnace is of brick, 20 feet long, 6 feet wide and 7 feet high, and is heated with three gas burners located in the discharge end and fir-

ing along the arch which radiates the heat down on to the work.

Forging temperatures range from 2100 to 2300 degrees Fahr., depending upon the type of steel, and the correct heat is maintained within the heating chamber by two automatic temperature controls with recording pyrometers and motor operated valves in the gas lines. The gas-air ratio is adjustable so that a reducing atmosphere is maintained. The extreme length of the furnace affords a dual purpose. First, it takes the stock a sufficient length of time to pass through, and to be soaked throughout at the correct temperature, thereby preventing the possibility of a forging with a hot outer section expanding away from a colder core. Second, it increases production to the point where one furnace will feed hot stock to two hammer crews. Board and steam hammers ranging from 600 to 15,000 pounds in capacity are used.

Heat treatment consists of normalizing, heating for the quench and then drawing. Normalizing is usually accomplished at 1575-1625 degrees Fahr. The forging is then reheated to just above the critical temperature and allowed to cool either in the furnace or in the air according to its chemical analysis. Heated to above the critical point again, it is quenched in either oil or water, again according to chemical analysis, and drawn at from 1000 to 1200 degrees Fahr., depending upon the brinell hardness and physical properties required.

In one section of the heat treating department units of two gas furnaces are employed, one for heating for the quench and the other for drawing, the quench tank being located between the two. The draw furnace can also be used for normalizing or annealing. These furnaces are of the continuous pusher type with automatic temperature controls and the heating period is automatically maintained by a time clock control on the pusher. They are of brick construction well insulated to prevent radiation losses and are 20 feet long, 6 feet high and 6 feet wide. Each is provided with three gas burners on a side, each burner firing into an arched duct under the hearth to the opposite side where the heat is deflected, by the side wall, up against the roof of the furnace and then down on to the work. A separate duct is provided for each burner so that the burners are staggered.

Work Loaded on Shoes

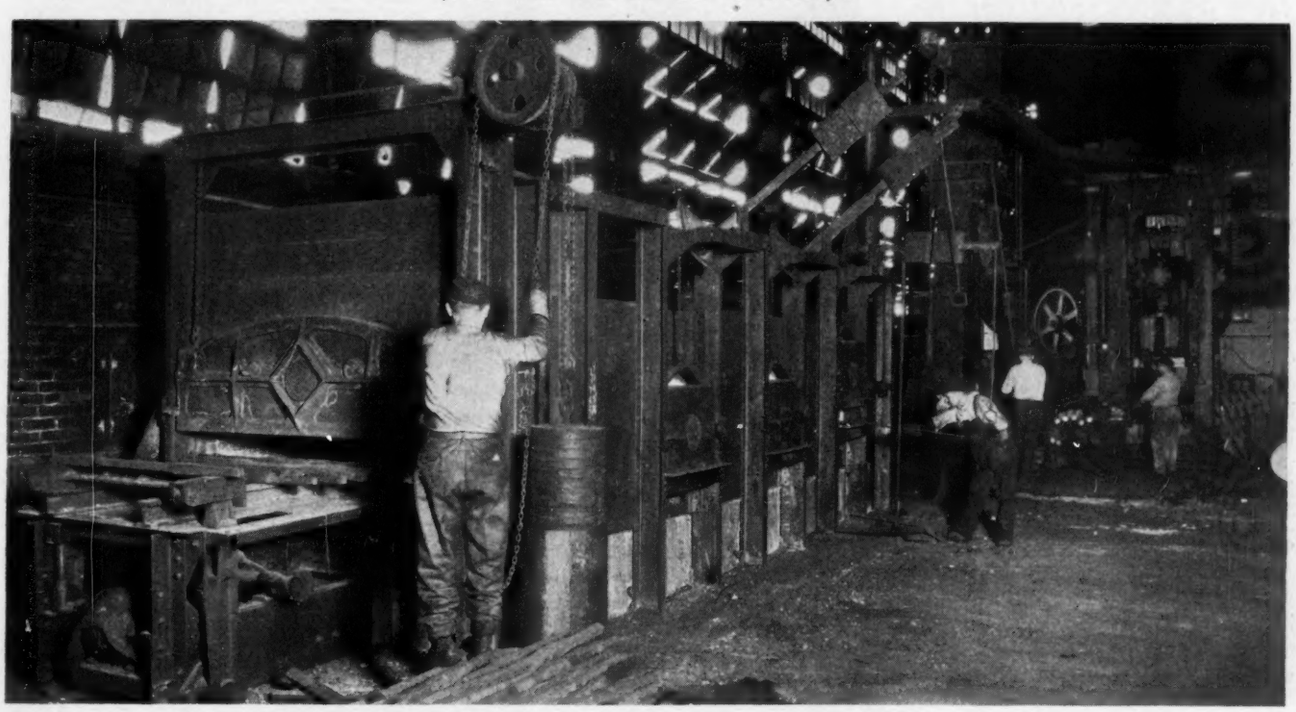
The hearth of the hardening furnace is equipped with four alloy steel rails and the work, loaded on channel iron shoes, is pushed through on the rails. At the discharge end, work and shoes drop off into the quench bath which is held in a steel tank 10 feet long, 7 feet wide, and 4 feet deep. An elevator conveyor, motor driven, the speed of which can be regulated to permit the forgings to remain in the quenching medium the proper length of time, takes them up out of the quench where an operator picks them off and places them on the charging table of the draw furnace and at the same time puts the shoes in tote boxes for return to the charging end of the first furnace. When the work emerges from the discharge end of the draw furnace it is picked off by an operator with tongs, restruck in a hammer and placed either on the floor to cool or in tote boxes as the case may be.

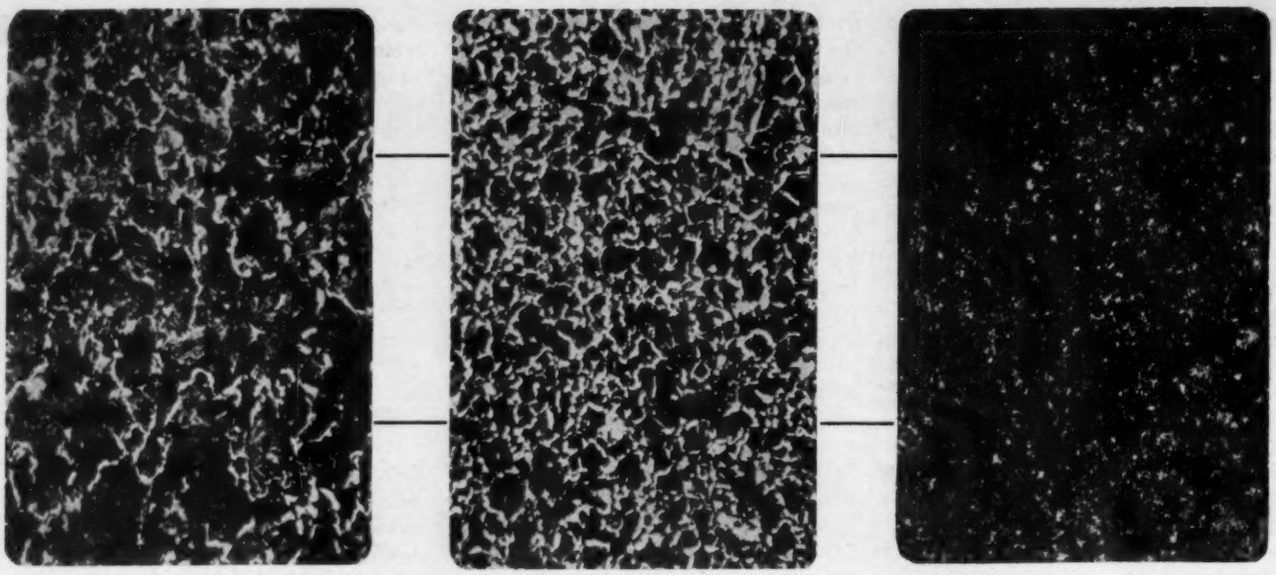
Another battery of gas-fired furnaces is operated in this section, identical in design and operation, except that they are equipped with mechanical means of handling the trays. They are also smaller, being 16 feet long, 4 feet wide and 5 feet high. The trays in this case have trunnions which ride up onto short rails at the discharge end of the furnace, allowing the tray to swing downward so that the work falls into the quench. These rails make a turn and meet an overhead monorail system where an operator lifts off the trays, and rolls them back to the charging end. These furnaces also are provided with automatic temperature controls. Other groups of gas furnaces of the periodic type are provided for heat treating miscellaneous forgings.

In general, it may be concluded that the principal factors involved in producing forgings of the highest quality and with the correct grain flow are:

First—Selection of the proper type of steel that will show the

GAS-FIRED pusher-type billet heating furnace showing operator removing hot billet from side door at discharge end. To open this door the operator simply manipulates a treadle. The billet is grasped in tongs suspended from an overhead monorail and swung into the 10,000*-pound steam hammer in background. The setup is used principally for forging front axle I-beams and crankshafts*





Three photomicrographs of chrome-nickel steel. The first, at the left, is after drop forging; in the center is the steel after normalizing and at the right, after heat treating

maximum physical properties when correctly forged and heat treated.

Second—Carefully checking each heat of steel received from the steel mill, both chemically and physically. This includes etching and examination for internal defects such as nonmetallic inclusions, porosity, pipes or segregations, and external defects such as seams or sharp corners caused by poor chipping.

Third—Thoroughly heating the billet section uniformly throughout its entire cross sectional area, to the proper forging temperature, and in a reducing atmosphere to minimize scaling.

Fourth—Skillfully placing the hot steel in the various dies and so regulating hammering as to cause the grain to flow along the lines previously determined and blue printed by the forging engineers.

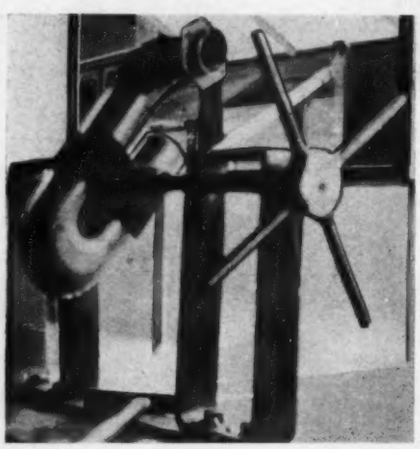
Fifth—Correctly heat treating to bring out the maximum physical characteristics, and accomplishing this in reducing atmospheres to minimize scaling.

Welding Jigs Require Careful Design

Since a great deal of welding is done with the aid of a jig, this piece of equipment becomes an important item in the modern welding shop. Economy, speed, standardization of the product, and a regularity of the welding operation are the principal advantages that are gained by the use of a jig.

In designing a jig to fit a special application of welding all the following items should be kept in mind as the basis for the ideal welding jig and as many as possible of these features should be included in its make-up.

An efficient welding jig should hold the work pieces positively in position; be made so that the work can be quickly inserted and removed; make impossible the insertion of the work piece in any but correct position;



provide devices for rapid and steady clamping and adjusting without undue effort; allow no spring in the work piece from clamping operations; allow no buckling, warpage, or other distortion from expansion or contraction due to the heat of the blowpipe; permit inspection of the weld, if necessary; be easily cleaned, and have faces which will hold without marring the work; be as light as is consistent with the rigidity and strength necessary in such equipment; be easy to handle and not unwieldy; be safe under any and all circumstances; by its construction or location, permit the welder to work without any undue inconvenience or unnecessary fatigue; and be movable, if possible, so that all welds can be made in a horizontal position.

The movable jig shown in the accompanying illustration is a typical revolving jig of simple design. This jig is used in an automobile factory in the fabrication of heaters. The two parts of the heater are put in the jig which is counterbalanced to hold it in position. After welding, the jig is turned over and the second seam is welded in the horizontal position.

Although welding jigs vary in design from the simple type illustrated to structures that are quite intricate all welding jigs have a common purpose that of expediting and simplifying a specific welding operation.

Producers Adopt Screw Thread Standard

Commercial standard for special screw threads, section II, of the American national screw thread tables for shop use has been adopted by a majority of manufacturers and users as recommended by the bureau of standards, Washington, and will become effective as standard for new production on July 1. Signed acceptances from a large number of persons interested were returned to the bureau in reply to an inquiry sent out last January. Many producers and users have followed the reports of the national screw thread commission for several years and for such organizations the effective date will indicate no change in practice. The chief purpose of the effective date is to identify the acceptors of record with the commercial standard.

Variety of Lubrication Problems Offered by Steel Industry

Utilization of Recent Designs of Oiling Systems Affords Economy in Life of Gears and Bearings and Eliminates Uncertainties

By W. A. James

Chief Engineer, Lackawanna Division, Bethlehem Steel Co., Lackawana, N. Y.

PERHAPS in no industry is the necessity for continuous operation of such importance as it is in the steel industry; and in no industry are the losses resulting from enforced shutdown so great. To maintain continuous operation at a minimum cost per ton, is the main and ever-present objective of every steel mill. The fact that so many conditions, roll changes, furnace operation, breakdowns, etc., are constantly combining to defeat this objective, is the primary reason why modern lubricating practice, now demonstrating its ability to reduce costs all around and maintain machinery at a much higher level of efficiency, is of such especial significance to steel men.

New Systems Replace Old

In some form or other, modern lubricating systems and methods are rapidly replacing older methods. One of the most outstanding of these is the so-called "circulating system," which is becoming the chief method of lubrication for the most up-to-date steel mills. It includes a main supply line, with branches to the various elements to be lubricated, a common return line to take the individual returns from each element, a suitable tank for receiving and cooling the return oil and separating water and heavy impurities from it, and a means of cleaning and purifying the oil, as well as storage capacity for the oil.

A second, comparatively new, method of lubrication is what is known as "forced feed" lubrication. This has proved the solution to many problems, particularly those involving individual machines such as punches, drills, and others, where operation is intermittent. Systems of this kind are operated at varying pressures from the machines to which they are attached. The forced feed pumps can be constructed with any number of oil feeds, which can be piped to the different bearings. The amount of oil supplied to each bearing can be accurately regulated through adjustment of the stroke of the pump plungers to suit the individual bearing requirements. These oil pumps, driven from some moving part of the machine, only operate when the machine is running.

A third form of lubrication developed only within the past few years and now coming into rather general application, is the "centralized system," which uses either oil or grease. Manually operated one or more times during the day, it forces the lubricant to the bearings on the machine or equipment. Its application has been particularly successful with respect to individual machines, and it has developed into a useful method of lubricating overhead cranes. Its main advantage is that it is applicable to many operations where either the nature of the operation, or the initial expense involved, precludes the installation of a "forced feed" system.

Roll Neck Lubrication Important

Perhaps the major aspect of the lubrication question in a steel plant is lubrication of the roll necks. In days gone by, the roll necks were usually lubricated by the primitive method of laying or packing a piece of hard grease on them, in such a way that whenever the friction increased sufficiently to warm the neck, a quantity of grease melted and for the time being decreased the friction. A stream of water was played on the neck to assist in keeping down the temperature. Until only a few years ago, the bearings were usually made entirely of brass or bronze, which, although representing a maximum factor of safety against shut-down, meant higher friction and greater costs of bearing renewal.

A great improvement was introduced when babbitt metal was used in the construction of these bearings, giving alternate brass and babbitt areas. The result was to reduce the friction and make the lubricant more effective. This type of bearing is now being widely used in steel plants. The brass is usually an insert, held in position when the babbitt is poured around it. It is of particular importance, however, to have brass against the shoulder of the roll-necks to take the thrust.

A lime soap base grease with about

Friction Demands Toll

ONE of the most fertile fields for investigation open to the lubricatcating engineer is the conversion department of steel mills where about one-half the power used for rolling is required to overcome friction between parts. Effective lubrication, the answer to the terrific toll of power, involves a study of laws of resistance and velocity and the composition of fluids and should command the attention of those engaged with mill maintenance costs and with machine production. The importance of the subject is emphasized in the accompanying article taken from a paper presented at the spring meeting of the American Iron and Steel institute, New York, May 9. The author, W. A. James, is chief engineer, Lackawanna Division, Bethlehem Steel Co., Lackawanna, N. Y.

6 per cent of manufactured graphite, to which a light steam-refined cylinder oil is usually added, has proved a satisfactory lubricant for roll-necks. The density of the grease for roll-neck lubrication is regulated according to the speed of the rolls, the hardest grease being used on the low-speed necks.

Automatic lubrication for this part of the equipment can improve conditions considerably, and its installation is not necessarily either complicated or expensive.

Lubrication of vertical rolls has presented some especial difficulties in the past. This has been particularly true of their bottom bearings, since these were split open at the bottom, enabling the lubricant to run out. Use of a bushing type of bearing, closed at the bottom, now effectively prevents this. Grease, applied through a pressure fitting on the bottom end of the bearing, and able to work out of it only by passing upward between the top flange of the bearing and the shoulder of the roll, is now used as a lubricant in these cases.

Mill pinions, until quite recently, were lubricated by being swabbed with a heavy-bodied pitch or still-bottom residue, which was considered necessary to take the shock from the teeth during the rolling operation. The use of this so-called grease on the pinion teeth, and of oil on the necks, made contamination almost inevitable. If the grease got into the bearings they became hot, and if the oil got into the pinion-housing a lowering of the consistency resulted.

Lubrication Improvements Essential

The advent of higher speeds, and of herringbone pinions constructed of high carbon steel, made improvement in the methods of lubrication essential. The troubles just described have been for the most part successfully overcome by use of the newer designs of pinions and pinion-housings. Pinions in certain mills run in a bath of asphalt base grease, the density of which is determined by the speed at which the pinions run, the heavier consistencies being used with the slower-speed mills. The pinion necks are lubricated with a heavy body oil by means of a "forced feed" pump, while provision is made for supplying oil through a gravity system in an emergency. The pump is driven direct from the pinion neck, and operates only when the pinions revolve.

In many instances, such as on ore-unloading and reclaiming cranes or bridges, and on overhead cranes in the open-hearth department, this equipment must of necessity operate in an atmosphere containing a large amount of dust of a more or less abrasive nature. It is of the utmost importance, therefore, to take this factor into consideration when selecting the lubricant.

Among the minor aspects of the lubrication question may be mentioned that of lubricating the butt conveyors, which handle hot materials. Though a smaller problem, it is one in which working conditions make it difficult to obtain the best results. Success, however, has followed the practice of running the reduction gears in a bath of soda-grease and lubricating the bearings by means of a "forced feed" pump, using a 280 second viscosity Saybolt 100 degrees Fahr. asphalt base oil.

Saw Bearings Are Troublesome

The bearings of hot and cold saws have always presented a somewhat troublesome problem in lubrication, on account of their very high speeds and severe operation. The adoption of antifriction bearings on the new spindles has in many instances satisfactorily solved the bearing problem. For these bearings 1½ per cent lime soap base grease, compounded with 1 per cent of manufactured graphite, has proved very efficient as a lubricant.

Lubrication of steel cables is not often given the consideration it deserves, although the life of these cables depends largely on the use of a proper lubricant. This is particularly true of cables on the skip hoists in the blast furnace department, where in the absence of proper protection the bare metal will be attacked by the sulphur fumes in the atmosphere around the furnaces.

Antifriction bearings of various types are finding an ever-increasing use in the steel industry. Practically all rolling stock, such as transfer scale cars, hot metal and cinder cars in the blast furnace department, and charging box cars, ingot cars, etc., in the open-hearth department, are now equipped with this type of bearing, mounted in dust-proof housings. In addition, the table rollers in the most up-to-date blooming mills are now so equipped.

For lubricating this type of bearing a light No. 1 consistency low lime base grease has been found to be effective in warm weather, and a cold test grease in the winter. If the best results in the lubrication of antifriction bearings are to be obtained, the soap content in the grease should be kept down to a minimum, not exceeding 1½ to 2 per cent. Unless this is done, the light oil separates from the soap, allowing the latter to harden in the races and to interfere with proper lubrication.

Mill motors, generators, mill engines, blowing engines and steam turbines should also be lubricated by some automatic method. While the two former classes of equipment will operate satisfactorily with the ring oiling bearings with which they are provided, the addition of an automatic circulating system is an economical form of insurance against shut-down, and large motors for mill drives and motor generator sets are frequently lubricated in this way.

Turbines are often provided with a small oil container in their base. Experience has shown that these containers are usually too small, and that it is advantageous to supplement them with a standpipe of oil in series with the system. This means that the oil is not worked so hard and has a chance to cool and settle, while it will be kept in condition for several years without centrifuge or filter.

Heat, air, water and solid impurities are the natural enemies of lubrication. The two former cause oxidation of the oil to some degree, which forms some products that are soluble and others that are not. When water combines with these products of oil oxidation, and other impurities, emulsions are formed. The activity of such foreign agents is best overcome by using an oil of maximum chemical stability, removing the water and solids from it, and reducing the soluble oxides.

Lubricant Needs Body

The correct lubricant must possess sufficient body to establish on the working surfaces of metals a film of enough strength to resist rupture from the pressures imposed. The most severe pressures occur on the engaging teeth of pinions, owing to the shock loads involved. The correct lubricant should also be adaptable for use in a "circulating system," where constant reuse of the same quantity of oil is entailed.

As regards lubrication costs, the following percentages are fairly representative of their division, in well-equipped steel plants, consisting of coke ovens, blast furnaces, open-hearth furnaces, rolling mills and auxiliary departments.

	Per Cent
Rolling mills	51.53
Coke plants	9.45
Blast furnaces	15.59
Open hearths	8.46
Steam, air and water	2.97
Miscellaneous	12.00
	100.00

As these percentages indicate,

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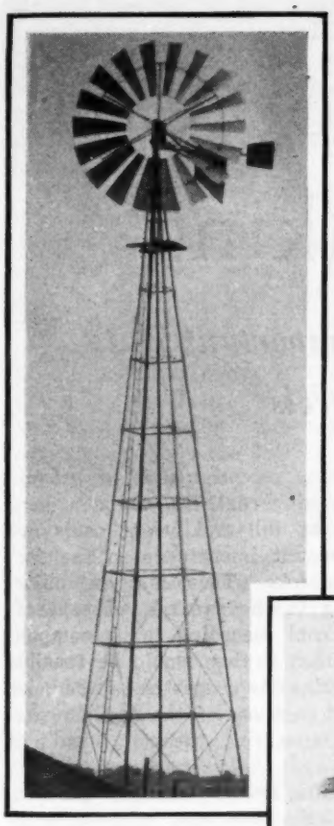
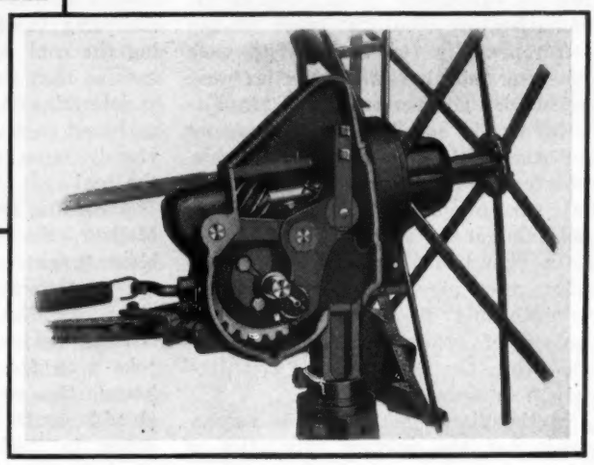


Large Uses of Steel in Small Ways

168th Article — Windmills



A 12-foot mill on a 60-foot tower. Sheet steel is used for the vanes. Gears run in oil-tight, dust-proof cases.

DESPITE the more extensive use of the modern forms of power in rural districts the manufacture of the American type of steel windmill requires approximately 50,000 tons of finished steel parts, iron, steel and bronze castings in a year.

The height of the steel towers helps to determine the use of steel by the windmill industry. In the prairie and great plain states towers of 50 feet are common. Relatively few wood towers are in use. Nearly 50 companies manufacture windmills, exclusively or as side lines. Illinois leads with more than a dozen manufacturers, and Michigan and Wisconsin follow. Manufacturing plants are located in 12 other states.

Domestic sales of windmills have been on the wane in the last decade. In two years 1925 and 1927, sales declined by more than 68,000 units. Production of windmills amounted to 99,672 in 1928. Sales now are increasing in southern states.

Export trade in windmills is important. The exports to South Africa, where the American windmill has been adopted as standard, last year were valued at $835,420. In that country as in several others the volume shows steady gains.

From 55 to 60 per cent of the total tonnage of metal used in the manufacture of each windmill is finished steel. Several manufacturers average 43 to 44 per cent castings; 30 to 31 per cent steel bars, light structural shapes and shaftings; 20 to 22 per cent steel sheets, and 4 to 5 per cent miscellaneous steel material, including small stampings.

Sails Are Made of Steel

The sails, vanes, girts and arms of the windmills largely are of steel. Spur and rack and pinion gears often are of gray iron castings. The gears run in oil-tight dust-proof cases, the oil being carried automatically to cross head and pitman.

Windmills often are shipped without towers, equipped with tower cap and truing spider for attachment to four-post towers. Bedplates and spiders usually are cast. Pump rods are of steel. In addition, 10 to 100 feet of steel furl wire goes with each windmill to reduce the sail area for controlling the speed at which the mill is to operate.

For the sails and vanes No. 20 and 26 gage sheets usually are used, and ¾ x ¾ x ⅛-inch to 2½ x 2½ x ¼-inch galvanized angles are used for tower corner posts. For the tower girts, 1 x ⅛-inch to 3 x ½-inch galvanized flats usually are specified. Anchor posts generally are 2½ x 2½ x 3/16-inch galvanized angles. Mild carbon steel, usually 1015 S.A.E., is ordered, while spring steel is used for the vane hinges. Bronze bushings also are used.

The materials for the sails and vanes are sheared to size, while presses stamp a number of small parts that are used. The machining of the shafts requires the most exacting workmanship, the main shaft being assembled with roller bearings on the turntable.

The cast gear cases are machined and drilled. Following the assembly, manufacturers paint their finished products, some using the spray methods and drying ovens. Sometimes the windmill manufacturer galvanizes his own material before shearing, punching and assembly. Standard machine and production tools are employed.

It is pointed out by one or two manufacturers that a number of their customers now buy repairs for windmills which have been operating for at least 30 years. Production of parts is an important feature of the industry.

Real estate and property of the Elliott-Blair Steel Co., New Castle, Pa., will be sold at public auction June 27 at New Castle by receivers for the company. Property includes four mill buildings and equipment used for the production of cold-rolled strip. C. H. Forster and Noah W. Elliott are receivers.

Investigates Properties of Coal Suitable for Cokemaking

German Iron and Steel Institute Meeting Discloses Important Data on Raw Materials and Copper-Alloyed Steels

THE general meeting of the German Iron Steel institute in Dusseldorf, May 17-18, proved of interest to American industry because three of the eight technical papers dealt with research work in iron and steel as it is conducted west of the Atlantic. More than 1500 European steelworks executives attended the sessions which were presided over by Dr. A. Voegler, president, United Steel Corp. One of the features of the program was the bestowing of an honorary membership upon Professor Wuest, formerly director, iron and steel division, Technical university, Aachen, Germany, and one of the founders of the Iron and Steel Research institute, Dusseldorf, now the center of metallurgical research.

Exact Tests Difficult

Dr. A. Wagner, in speaking on "The Evaluation and Investigation of Raw Materials and Primary Products for the Iron and Steel Industry," explained that the properties and products are little known because of the difficulty in making laboratory tests under the exact reaction and temperature conditions of the practical smelting and metallurgical processes.

The relationship between the chemical analysis and the coking properties of the coal are complicated, he stated. In America types of coal with an unattractive composition and considered as almost unsuitable for coking in Europe, are treated successfully. The wide difference of the properties of the coal influence the appearance and physical properties of the coke and its behavior in the smelting process. Unfortunately, laboratory methods do not suffice for the determination of the differences of the coking types available for selection, because the samples are crushed substantially and this destroys the cellular structure and density of the coke. In addition the method of reduction carried out in accordance with Widborg's method of evaluating iron ores requires the ore to be crushed to grain size so that the size of lumps, density and porosity cannot be determined.

The chemical analysis gives insufficient data on the properties of pig iron, as was shown by an extended examination of about 20 types of pig iron repeatedly remelted. With each remelting the physical properties were improved. The percentage of graphite is influenced sensibly by the amount and composition of the slag. In microtexture of several pig irons substantial percentages of titanium nitride and manganese sulphide were found. As a rule titantium has a favorable influence on pig iron by improving the strength and by increasing the percentage of graphite in the same degree while the percentage of combined carbon is reduced.

In the discussion Dr. Peetz emphasized that the surface properties of coke are just as important as the strength and hardness. It is possible to modify the properties of coke in the oven to impart the proper smelting qualities, he stated. From the standpoint of production, the coke should be uniform so that the operation of the blast furnace can be put on a firm and definite basis.

Depends on Reactivity

Dr. Zilliken in commenting on the results of investigations made in order to previously state the desirable properties of coke to be used in the foundry cupola and in the blast furnace, stated that coke having a maximum of reactivity was the least suitable for foundry use. The coke burns in the cupola in a thin superficial layer only, he said, whereas the core of the coke lumps and remains unchanged. The nature of the surface of the coke lumps is of paramount importance to the quality of the coke. Blast furnace coke made in obsolete ovens results in irregular working of the stack. When the value of iron ores is to be estimated, he declared, all phenomena in the blast furnace should be taken into account.

In pointing out the results of investigations recently made of properties of coking coal, Dr. Gollmer mentioned that dull and bright coals are of paramount importance in the formation of coke. There is a possibility, according to the speaker, of separating the coal according to its components so that it then would be feasible to determine the properties of the coke, as based on those of the coal, by previously separating the components of the coal.

According to the experiences of Dr. Meltzer, the practical evaluation of blast furnace coke may be limited to the determination of the ignition point. Dr. Neumark stated that by extending the carbonizing period in the coke oven from 23 or 24 hours to 28 hours, the consumption of the coke should result in the statement of the zones in which the reactions take place in the blast furnace.

Chart Aids Calculations

In his paper "Heat Contents, Flow of Heat and Gas as the Physical Basis of Metallurgical Processes," Dr. H. Bansen stated that by the heat-temperature chart, that is, the chart in which the quantity of heat available is plotted against the corresponding temperature, it is possible to determine the influence of heating the blast and of the counter-current of coke moving against the blast furnace gas as exerted on the heat output of the coke. The chart is intended for clearing up the influence of the expulsion of carbonic acid, of the formation of slag, of cooling the hearth and of the share of direct reduction on the consumption of coke.

"The Judgement of the Possibilities of Reaction in the Making of Steel by Means of Physicochemical Notions" was the topic of the paper presented by Dr. H. Schenck. The production of steel, he stated, is based chiefly on chemical reactions intended for eliminating from the metal the undesirable elements as completely as possible but the useful ones within certain limits. The extent of the possible reactions

largely depends on the analysis and temperature of the slag and by modifying these conditions, the course of the reactions can be restrained or promoted. For judging these conditions the laws of the physicochemical equilibrium are employed.

A paper, "Tests and Applications of Rust Preventing Agents in Some Industries" by Dr. O. Mauermann, dealt with the progress made in the fields of rust prevention and more particularly with the results of lengthened research work concerning the application of artificial resins to the protection of pipe lines. Mr. Jaeger described a protective painting method which consists in the application of a red-lead priming coat, an intermediary coat of nitrocellulose varnish and a body color.

Dr. F. Nehl in speaking on "Mechanical Properties of Copper-Alloyed Steels with Special Reference to Heat Treatment," mentioned that copper contents up to 1.5 per cent do not lead to difficulties in the working of copper-alloyed steels. The yielding limit and the strength are increased in copper steels containing more than 0.6 per cent by annealing them at temperatures varying from 400 to 600 degrees Cent. Quenching is not required because temper hardening takes place after normal cooling in air. This fact permits of improving parts which cannot be quenched on account of their design or which at least are likely to be damaged because of stresses or cracks.

Degree of Hardness Important

The same topic was discussed by Dr. W. Koster in his paper on "Temper Hardening Copper-Alloyed Steel." In the iron-copper alloy the increase of hardness results in a technical valuable improvement of the material the speaker declared. The yielding and endurance limit of chromium-copper steel are improved 23 to 30 per cent and the tensile strength 20 per cent. The iron-copper alloys behave in the same manner as other iron alloys hardenable by tempering, he declared, but it should be remembered that copper separates out sluggishly and that it tends little to a concentration of the separated particles. At room temperature and up to 600 degrees Cent. iron dissolves about 0.4 per cent copper. In excess of this temperature the amount dissolved is increased to 3.3 per cent at 810 degrees Cent. When cooled from the range of the gamma-mixed crystals there develops an oversaturated alpha-mixed crystal which is found to be an analogon of the carbon martensite.

Particular interest was offered by the reports which Prof. Koerber, director, German Institute for Iron Research; Prof. E. H. Schulz, director, research institute, United Steel Corp.; and Dr. O. Petersen, general secretary, German Iron and Steel institute made on an inspection trip in the United States in the fall of 1929. The chief purpose of this trip was to study the present state of research work in the American iron and steel industry. According to statements of the three investigators conditions for research work in the American iron and steel industry differ from those prevailing in the German iron and steel industry in that large quantities of identical products are made and small and uniform rolling programs followed in contrast to the small extent of the orders and the extended rolling programs in Germany. Almost the whole production is absorbed in America whereas exportation ranges from 30 to 40 per cent of the quantity produced in Germany. These conditions indicate that iron and steel research is a factor of secondary importance in the United States but a necessity in Germany.

Steel Treaters Schedule Nitriding Symposium

Intense interest in the latest developments in nitriding has led to the scheduling of a symposium on the subject for the annual meeting of the American Society for Steel Treating during the National Metal congress in Chicago, Sept. 22-27. This will mark the second consecutive year that nitriding has had a principal place on the program, the symposium presented in 1929 arousing such enthusiasm that the society decided to continue the discussion. Papers will be presented by A. B. Kinzel and J. J. Egan, Union Carbide & Carbon Research Laboratories, Long Island City, N. Y., Robert Sergeson, Republic Steel Corp, Canton, O.; W. J. Merten, Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.; H. W. McQuaid, Timken-Detroit Axle Co., Detroit; and J. H. Higgins, Camden Forge Co., Camden, N. J.

Some of the other speakers appearing on the tentative schedule are J. L. McCloud and Mr. McCarrol of the Ford Motor Co., Detroit, who will present a paper entitled "Notes on Rustless Steel Fabrication"; G. R. Brophy, General Electric Co., Schenectady, N. Y., with a paper on "Stresses and Cracks in Hardened and Ground Steel"; W. A. Timm, Hawthorne works, Western Electric Co., Cicero, Ill., whose paper will discuss various heat treating furnaces; and Arthur Phillips of Yale university, New Haven, Conn., and R. W. Baker, of the Republic Steel Corp., Canton, O., who will present a paper dealing with a study of a high-chromium low-carbon steel.

Eight sessions of the congress will be devoted to technical programs, one will be a conference on sales topics, and another will be the annual meeting and presentation of the Campbell Memorial lecture by M. A. Grossman, Republic Steel Corp., Canton, O.

Steel Industry Offers Lubrication Problems

(*Concluded from Page* 62)

practically one-half of the lubricants consumed in a steel plant is consumed by the rolling mills. The cost of lubrication in this instance has been lowered by driving the rolls by motors in place of steam engines. Such cost for fairly large blooming mills is $0.005 to $0.006 per ton of steel produced, when motor driven, and $0.008 to $0.01 per ton, when engine driven.

Lubricants will be most economically used when each department's requirements are apportioned and delivered from the central oil house each day. Such daily allotments should be based on minimum requirements, a careful study having previously been made of each department's needs for the several different grades of oils and greases.

Generous and scientific lubrication is no longer a matter of secondary importance, to be left mainly to human operation. If the machines are to run well and continuously, every advantage must be taken of the inventions and discoveries of modern lubrication.

Will Auction Equipment

Peerless Motor Car Corp., Quincy avenue and East Ninety-third street, Cleveland, through the Industrial Plants Corp., auctioneer, 25 Church street, New York, and Nicholas building, Toledo, O., will sell at public auction, June 19 and 20, all surplus machinery and equipment, raw materials and supplies of the company's No. 2 plant. The sale, necessitated by the expansion of No. 1 plant, will comprise approximately 400 machine tools, electrical equipment, general tools, automobile supplies, wheels, hardware, pumps, steel and metals. An illustrated catalog describing the equipment to be sold may be obtained from the auctioneer.

Tool Builder Completes 50 Years

Principals in half-century celebration. From left to right: Philip E. Bliss, Ambrose Swasey and Dexter S. Kimball

THE Warner & Swasey Co., Cleveland, well-known manufacturer of machine tools and astronomical instruments, celebrated the fiftieth anniversary of the partnership of Warner and Swasey with a fitting program at its plant on May 23. Many prominent guests attended and heard addresses by President Philip E. Bliss; Ambrose Swasey, co-founder of the company and now chairman of the board of directors; and Dr. Dexter S. Kimball, dean of engineering, Cornell university, Ithaca, N. Y. President Bliss stated that many companies are able to hold half-century anniversaries but few have for 50 years been under the leadership and direction of the founders. In that respect, the business was unique and the celebration was unique. Worcester R. Warner, co-founder of the partnership with Mr. Swasey, died less than a year ago. As one of the features of the program, six employes who had completed 25 years of service with the company were presented with gold watches, making a total of 44 employes so distinguished. In addition, 14 boys received prizes won in the annual apprentice essay contest. The celebration was concluded with a formal dinner. Portions of the addresses of Mr. Swasey and Dean Kimball are given on these pages.

By Ambrose Swasey

THERE has been great changes in scientific research, in astronomy, in physics, in chemistry, that have had much to do with the manufacturers in this country. The metallurgist has been busy during these years, and one of the results of his research was the new high-speed steel some 40 years ago. That steel, in itself, revolutionized the machine tool industry, and it was not long after it was developed that new machines had to be designed to take advantage of the opportunities offered by it. Before that time steel, sometimes called mushet steel, had been used for generations, but with this new high-speed steel one machine would do the work that had previously been done on six or eight machines. I am confident if it had not been for that discovery of the metallurgist that we would not have so many automobiles as we do on our streets today, because it would not be possible to turn them out with the rapidity of the present, and the cost would be much greater. It was often remarked during the world war that if it had not been for this new and improved steel, and the new machines which were designed to use it, we could not have supplied the munitions, the shells, and the shrapnel, and all those articles that belong to our great guns, and small ones, needed to carry on the war. So you see that was quite an important thing.

Today there has come another great work of the metallurgist—another material, tungsten carbide, fully as far advanced as high-speed steel was ahead of the old-fashioned steel. This, again, in time probably will mean another revolution in the machine tool business; it has not yet been brought about, but it will be, I am sure, at a very early day. So you see in the steel industry, and this industry in which we have taken an important part, these wonderful changes have taken place, and are still taking place. That leads me to say that I believe, aside from the fact that this has been one of the great half-centuries of the world—and some have said that in this half-century more has been accomplished than in any two full centuries previous, that the time hasn't come when these improvements are to stop, and I think these young men who have charge of the works in all of these great industries today will find in the future plenty to do. The scientists, and metallurgists, and men who are doing the thinking and planning will continue the processes of working out these great things; there are today great storehouses of knowledge to be unlocked by the scientists, by the engineers, and by the industries, for the benefit of mankind.

By Dexter S. Kimball

IT IS a curious thing than men who had occupied this earth for thousands and thousands of years had given so little attention to the problem of tools. As late as about 1800 you find people still using the same identical tools that their fore-

fathers had used for thousands of years. The spinning wheel and the old-fashioned loom were common property to all manner of men, and in all parts of the world. No progress had been made over the earliest times. About that time, in England, there came into being, some new and different tools. In the great Kensington university museum in London some of the specimens of these tools are preserved. These new things did not come from philosophers, or college professors, but they came from toolmakers, inventors; one was a barber, one happened to be a preacher, and they were not based on anything anybody had ever done before.

Until 1800 there were no machine tools. The first lathe is also in the Kensington museum. It is a little lathe that any lady could pick up, but it is a complete lathe in every sense of the word. It is a complete tool of high order, with as complete a set of cutting tools as any lathe has today. Nearby is another lathe made also by Maudslay, and they are very carefully guarded, because they are the beginning of our machine tool industry.

Along in the middle of this century, about 1850, there appeared in New England another advance in machine tool work, of highest importance. I don't know why this invention first came to New England, except that New Englanders are geniuses anyway, of which Mr. Swasey is a type. From them came the first turret lathe. Probably the "turret" was in use before that, but the first turret lathe invented about 1850 was the next great step in machine tool work; and those of you who have kept track of the first automatic machine in this country, know enough of the use of the turret; it has been used more than any other principle.

I want to go further and tell you about the automatic machine, also a New England invention, which came also from a very similar kind of people. I want to impress on you that these inventions came from mechanics, not philosophers. We have gone a long way in size since that little lathe. We now have lathes that will machine parts 10 feet by 40 feet in length. I know of one boring mill of 60 feet capacity at Schenectady, and there may be larger ones; but the point I want to make is if we want a machine up to 100 feet we could make it. So far as limitations are concerned, they have been removed.

Per Capita Wealth Increases

Since the invention of the turret lathe and automatic lathe about 1850, the per capita of the United States has stepped up steadily through good times and bad times. It was $380 when the turret lathe was invented. It is close to $4000 now. The estimated total wealth of this country last year was $400,000,000,000, and the income was estimated at $90,000,000,000. No people have ever talked about any such sums of money. No people have ever possessed it. No people have ever lived on such a high level, not since time began. Nobody knows better than I do, or Mr. Swasey, the dark spots in our industrial picture. It isn't all good by a great deal. Nevertheless, no people that ever occupied the face of this earth have lifted themselves to the economic level that we have in this country.

I am perfectly well aware that there are many things in this industrial system of ours that need correcting, and there are some very dark spots in the picture. This, however, I do not consider as beyond our control, and there is no reason to believe we cannot in this country with modern intelligence, with modern education, fully conquer our environment, and give us full control of our surroundings, give us what we call universal well being, a state of society where all men will have enough food and shelter, where all people will have education, shorter hours, and protection against plagues and disease.

It is no mean thing to be connected with that group we speak of as the toolmakers, because on that industry depends the very welfare of humanity, its hopes, and health, and prosperity, and I would have you think well of it, because only as man produces better tools does he rise to higher levels. It is for that reason, also, that it gives me very great pleasure to congratulate the founder of this institution on the great work he has done. To men like Mr. Swasey, and remember it is only a little group, and they have only had about 130 years to work in, the world owes more than to all the old philosophers that ever lived. If the old Greek philosophers had devoted their efforts to bettering the conditions of industry they would have done more for humanity than they ever did with all their philosophy.

Several hundred people assembled in the Warner & Swasey plant for the fiftieth anniversary celebration

Consider Blast Furnace and Coke Oven Problems

THE annual spring meeting and election of officers of the Eastern States Blast Furnace & Coke Oven association, held June 6 at the Meadowbrook Golf and Country club, Clarence, N. Y., brought together about 130 operating officials for round table discussions and interchange of ideas on iron and coke making practice. The morning was given over to two separate sessions by the blast furnace and coke oven groups.

J. T. Whiting, vice president and general manager, Hamilton Coke & Iron Co., Hamilton, O., presided over the blast furnace meeting, which had three subjects for discussion. "Utilization of Blast Furnace Gas," introduced by R. A. Gillies, superintendent of blast furnaces, Steel Co. of Canada Ltd., Hamilton, Ont., dealt with the consumption of gas in the hot blast stoves, soaking pits, boilers, heating furnaces, etc., and included a discussion of the extent of gas washing considered advisable. Costs were given for the cleaning of gas to certain degrees with various types of washers.

Open-hearth Slag Discussed

A discussion on the use of open-hearth slag in the blast furnace, led by A. W. Gittins, blast furnace and open-hearth superintendent, Pittsburgh Crucible Steel Co., Midland, Pa., included a description of the satisfactory results generally obtained by this practice. It was pointed out that the phosphorus content in the iron is a limiting factor in the use of open-hearth slag. The last subject on "Relation of Top Design to Flue Dust Losses," introduced by W. S. Unger, superintendent, Carrie furnaces, Carnegie Steel Co., Rankin, Pa., involved a discussion of dimensions of the stock line, large and small bell, and batter as well as the rate of blowing and fineness of the ore in their effect upon flue dust loss.

Coke oven men at their meeting considered gas conservation, coal washing and dry quenching of coke. A discussion on "Possible Variations in Coke Oven Operation to Conserve Gas" introduced by C. E. Underwood, superintendent, coke plant, Bethlehem Steel Co., Bethlehem, Pa., pointed out the possibilities for conserving gas through curtailing production of this fuel when not needed. In considering the effect of coal washing on coke structure, a subject presented by B. W. Winship, superintendent coke plant, Bethlehem Steel Co., Steelton, Pa., it was stated that the removal of impurities from the coal has an important effect on the coke structure, the washing having little other influence. A description of the process of dry quenching of blast furnace coke as practiced by the Rochester Gas & Electric Corp., Rochester, N. Y., was described by A. M. Beebee, general superintendent of the company.

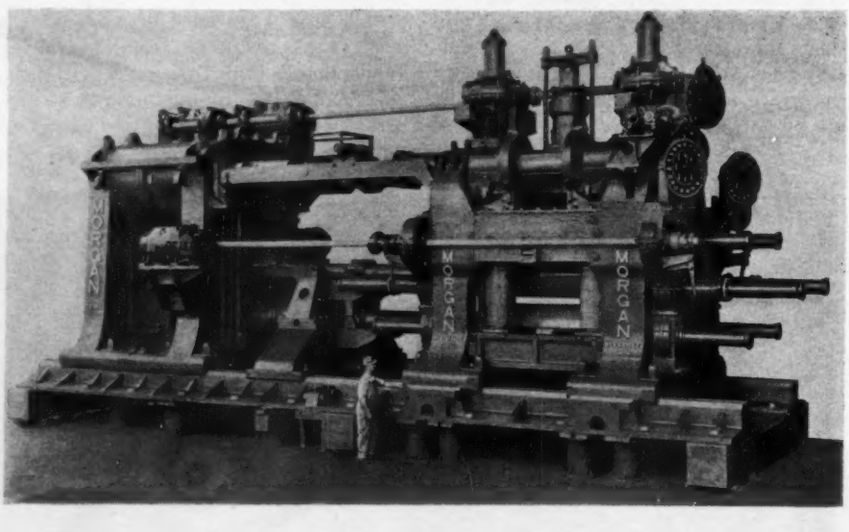
J. E. Lose, assistant general superintendent, Homestead works, Carnegie Steel Co., Munhall, Pa., was elected president of the association for the coming year at the annual election held Friday evening. Mr. Lose was vice president of the association during the past year and previously had been secretary-treasurer. Other officers elected included: Vice president, H. P. Zeller, vice president and general manager Donner-Hanna Coke Corp., Buffalo; and secretary-treasurer, J. T. Whiting, vice president and general manager, Hamilton Coke & Iron Co., Hamilton, O.

Plans Two Open Hearths

Officials of the Wisconsin Steel Co., Chicago, have authorized the installation of two open-hearth furnaces at its South Chicago, Ill., division. Construction of the units will be started during the last quarter of this year. The company's complement of open hearths at present includes four 100-ton, ten 84-ton and twelve 60-ton units, or a total of 26.

W-K-M Company, Houston, Tex., has increased its capital from $150,000 to 30,000 shares no par value and $150,000. The company has extensive improvements under way.

Builds Universal Plate Mill To Roll Wrought Iron



THE 46-inch two-high universal plate mill shown above recently was completed by the Morgan Engineering Co., Alliance, O., for the $12,000,000 plant which the A. M. Byers Co. is building at Economy, Pa., for tonnage production of wrought iron by its new process. As stated on Page 53 of the May 29 issue of IRON TRADE REVIEW, this mill will roll plates from 12 to 50 inches wide and with the vertical rolls removed will turn out sheared plates 84 inches wide. Maximum height of the mill is 20 feet 9 inches above the top of the shoes and the length from center of the motor to center of the mill is 53 feet 7¾ inches. The drive will be from a 4000-horsepower motor. The pinion housing is of the enclosed type with an oil spray on teeth of pinions just before meshing and all couplings between motors, pinion housing and mill are of the universal type. The mill will be delivered and installed shortly in the Byers plant now nearing completion.

Steel Angles from Chicago

Million Tons of Steel Extra in Farm Campaign

Grain Movement To Be Herald of Business Pickup?

CHICAGO, June 10

HERE where railroad and farm equipment orders mean much to the steel industry, the welfare of farming is looked upon by many as the power that eventually may pull business out of its slump. This may come partly through a heavy crop movement that will feed more revenue to the railroads, it is said, and thus stimulate diversified sources of demand.

Word has gone around among the personnel of the railroads to retrench at all possible angles for the present. Implement and tractor works are operating only about a third of the rate during first quarter, when everything was on a forced-draft basis in farm equipment lines. Several of the large implement makers are taking inventories this month, while others will close down for mid-season stock appraisal about July 1.

Oliver Farm Equipment Co. is among those taking inventory this month, and accordingly will be down at its various plants for about three weeks. J. I. Case Co., which turned out huge export and domestic orders for tractors in the last four months at its Racine, Wis., works, now is down to four days a week. International Harvester Co. is down at its Milwaukee plant, and has reduced forces and operations at Chicago and elsewhere.

* * *

WESTERN railroads are getting set for a substantial grain movement this season, furnishing a brighter hue to an otherwise drab picture. Roughly, wheat conditions in the Southwest measure up well with last year, despite some recent dry weather. Efficiency of the roads, both as to their ability to handle cars and condition of motive power, never was better in preparation for a grain season.

Six leading western roads have 60,000 to 65,000 box cars ready for the grain movement. The slowing down in the automotive industry has released more box cars for carrying wheat. The Santa Fe has 20,000 cars available and suitable for shipping grain, of which 2000 are cars just built. Rock Island has 1000 new ones, of unusual sturdy design. Missouri Pacific, St. Paul and Burlington each have 5000. All these are awaiting the start of shipments, about July 1. What the grain shipments may accomplish in restoring confidence and revenues to the railroad buyers of steel will be observed with interest.

* * *

FARM needs in relation to the future consumption of steel are being studied from every angle. Steel sales offices now making surveys of farm buying power and its possibilities for the steel industry find not more than 10 per cent of the farms of the country actually are equipped with power machinery and implements. So-called barn steel offers a most promising field. It is shown that if the steel industry could "sell" the farmer on steel for the building of his barns and outbuildings, normal building and replacement from that source would add about 1,000,000 tons of finished steel yearly to consumption.

The American type steel windmill, which consumes about 30,000 tons of finished steel yearly, in addition to iron and steel castings and nonferrous metals, is finding a broader domestic market, particularly in the rural South, which is becoming more alert to the economic advantages of this type of steel equipment.

* * *

HOW the discriminating use of steel material in tractors is enabling them to stand wear and endure long

service is demonstrated in their performance records, which, like those of the airplane, set new marks each year. A farm equipment engineer points out that there is less apparent wear in the tractor of today after 1000 hours use than after 15 hours use in the tractor of even ten years ago. The longest continuous nonstop run has just been ended by the engineering department of a western agricultural college after 480 hours, the test having been made under actual farm conditions to gather data on wear and operation cost.

Special steels and heat treatment methods have added long life and reliability to the tractor, which in 20 years has grown in yearly output from 600 to 221,000 units.

* * *

ALL the freight car building works in the Chicago area are likely to be "flat" within 60 days. They now are operating above 80 per cent. Finished steel shipments have been continuing at 4000 to 5000 tons weekly for the last several weeks for the Chesapeake & Ohio cars let some weeks ago in this territory. These cars will be the last important units on the floors until new orders are placed.

About 2300 cars will be placed in July by Illinois Central, but as they apparently will be rather widely distributed among the freight car shops, the order will be of no significance in sustained operations of the builders.

Pullman is working on 1500 Chesapeake & Ohio cars at its Michigan City, Ind., works. Standard Steel Car Co. is building 4500 Chesapeake & Ohio cars here and at Butler, Pa. Pressed Steel Car Co's plant in this district is starting on a number of Chesapeake & Ohio cars, and likewise is completing work on some Louisville & Nashville units as well as a number for the Pere Marquette.

General American Tank Car Corp.'s plant at Indiana Harbor is working on 500 to 600 refrigerator cars for one of its subsidiaries, and the 500 stock cars for the St. Paul road. American Car & Foundry Co.'s plant on the South Side of Chicago will shut down within a week or two, its plants at Madison, Ill., and St. Louis already being down. While work on the Chesapeake & Ohio cars barely has been started, that order's completion by the last week in July will mean the windup of an eight-month season of unusually heavy car building in this district.

* * *

CHICAGO district rail mills likewise are finishing the season's primary rail rolling program for eastern and western carriers. This has been one of the heaviest on record. Having made delivery on the bulk of the schedules, which have been spread over a long delivery period, the mills foresee further dwindling and possible shutdowns late in July. Rail rolling has receded to about 75 per cent.

In view of retrenchment policies of the carriers at this time, the outlook is not propitious for a well developed secondary rail buying movement. At any rate, secondary buying is not likely to start July 1 as in the so-called normal years. This movement may be delayed 60 days, if it develops at all this season.

* * *

MERGER fever in the farm implement industry was at its height last year. Further mergers among the implement accessory makers are likely. The tendency is for implement accessory and automotive supply lines to occupy the same berth.

United States Pressed Steel Co., Ypsilianti, Mich., making automobile supply and farm equipment specialties, has purchased from the Youngstown Sheet & Tube Co. the latter's plant at Kalamazoo, Mich., known as the Harrow Spring Co., having assumed control June 1. The Harrow company has been widely known as a maker of harrow and cultivator spring teeth, weeder and rake teeth and other high carbon heat treated materials. The latter is equipped with the most modern forging and hammer equipment, pneumatic bending machines and electrically controlled ovens for heating, as well as oil tempering. The Pressed Steel company intends to expand farm implement accessories with its automobile supply business. New equipment will be installed for handling heat treated, high carbon and alloy steels, and the Pressed Steel company will move to Kalamazoo about July 1, when alterations will be completed.

* * *

PIG iron shipped from the East by steamer has ruffled an otherwise quiet market in the Chicago district. Short selling and offerings of boat iron at the docks at various price differentials have caused merchant furnace interests to meet competition, although boat shipments westward to Chicago this season numbered the fewest cargoes in years.

The boat iron caused market gyrations in keeping with the stock market, but the price range in the last week finally has settled apparently to a range of about 50 cents under recent prevailing merchant furnace prices.

* * *

RAILROADS have been ultra-conservative in taking up special steels for their equipment building. The toll of rust in the depreciation of rolling stock is something to consider, however, and a tendency toward alloy steel for forged car and locomotive parts is growing. The consolidations of roads into fewer large systems, and a consequent stimulus toward engineering developments, may hasten the movement.

That the use of alloy and special steels for locomotive building will increase as the railroads add to their shop equipment facilities for heat treatment seems assured. Heavier locomotive traction coincident with the more massive locomotives and the great weights and stresses also are factors in the choice of metals.

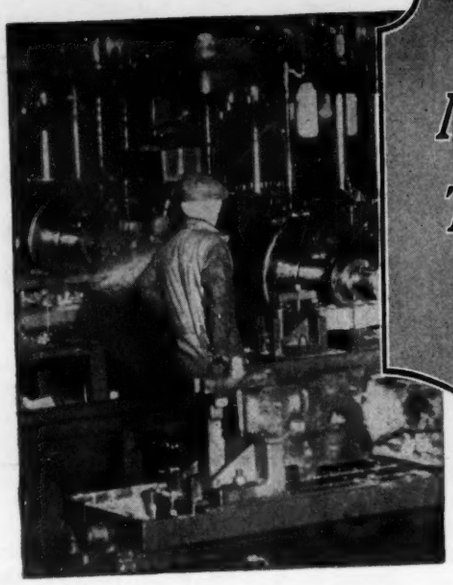
* * *

FOR a number of years, steel companies in this territory have been furnishing special copper-steel alloy material in plates, light structurals, bars and sheets for railroad car bodies. The growth in demand for such special material each year is commensurate with the needs of railroads for equipment that will stand the strain of heavy usage, and the growing desire for materials that will make equipment more enduring.

While a number of the western carriers, particularly the southwestern roads, still use 90-pound rails, that size rail section is being specified much less frequently. All trends are to the heavier rails. Major buying now is in 110 to 130-pound rails.

The Santa Fe last year laid 511 miles of 110-pound rail, 195 miles of 95-pound rail, and a short mileage of 130 pounders. Since the adoption several years ago of the 110-pound rail as the standard for the transcontinental main lines of the Santa Fe, 2631 miles of this weight have been laid down. Several of the carriers, as well as the frog and switch makers, order higher manganese rails each year, and some experimenting has been done in 3 per cent chromium low carbon steel rails. Actual protracted service tests of the latter are expected to demonstrate more fully the practicability of the products, although advantages of the high wear resisting and air hardening properties of such steel are obvious.

Ore dressing by the gravity concentration method is exhaustively discussed in a bulletin of the Missouri School of Mines and Metallurgy, Rolla, Mo., entitled "The Scientific Fundamentals of Gravity Concentration," by Josef Finkey, of Sopron, Hungary. The booklet, which has been translated into English, considers every phase of the problem, including development of formulas, charts, etc.



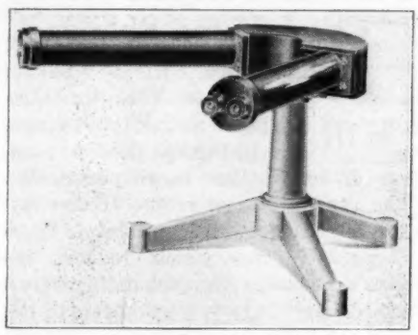
New Machine Tools and Shop Equipment

"There is always work and tools to work withal, for those who will."
—Lowell

Spectroscope Identifies Elements in Steel

No. 172

Adam Hilger Ltd., 24 Rochester place, London, N. W. 1, England, has designed a specialized spectroscope for the rapid estimation of metallic elements in steels which is especially adopted to workshop use and rough usage. The spectroscope, shown in



No. 172—Simple spectroscope indicates steel components

the accompanying illustration, can be used for rapid and reliable sorting and checking of steel stock and scrap and for general control of production. The instruments for shop use are provided for the determination of nickel and chromium, molybdenum and titanium, tungsten and cobalt, copper and tin and cadmium and vanadium in steels. Each spectroscope will indicate the presence of two different elements. Other instruments of more delicate construction can be obtained to indicate the presence of all of the above elements as well as many others which might be present in steel. Detection is made by observation of an arc which is struck between two bars of the sample being tested, mounted in a suitable frame and connected to a current supply.

The instruments have no adjustments and can be operated by an unskilled observer. In the instrument for nickel and chromium, the observation is provided by two eyepieces, in one of which is seen the most distinctive nickel lines in the spectrum, and in the other the most distinctive chromium lines. These lines are seen and identified by their position in relation to the iron lines grouped immediately around them. The instructions for use of the instrument contains a description whereby the observer unfamiliar with the spectrum may find the lines without difficulty.

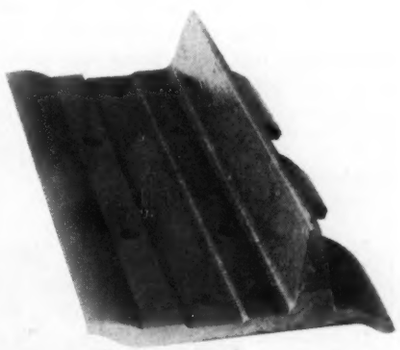
The spectroscope, termed a steeloscope, consists of a substantial casting, with the two screw-focusing eyepieces at the one end and a stout protective glass plate at the other, so that it is effectively protected not only against damage but against liability of becoming out of adjustment. Direct current of from 150 to 250 volts is necessary for operation of the instrument.

Rotary Machine Performs Many Operations

No. 173

Peck, Stow & Wilcox Co., Southington, Conn., has developed a motor-driven rotary machine for burring, turning, wiring, elbow edging, crimping, beading and splitting. This machine, which is made in two sizes with maximum capacities of 16 and 18 gage sheets, is equipped with a clutch control. The upper roll can be depressed with the crank screw and a foot treadle used for operating the clutch. If it is preferred to use the foot treadle for depressing the upper roll, this change can be made simply and easily.

The belt drive from the motor provides three speeds through simple quick change of one pulley and operates silently. An automatic belt tightener insures proper tension. Automatic lubrication is provided while



No. 173—Track shoe performs well despite rough usage

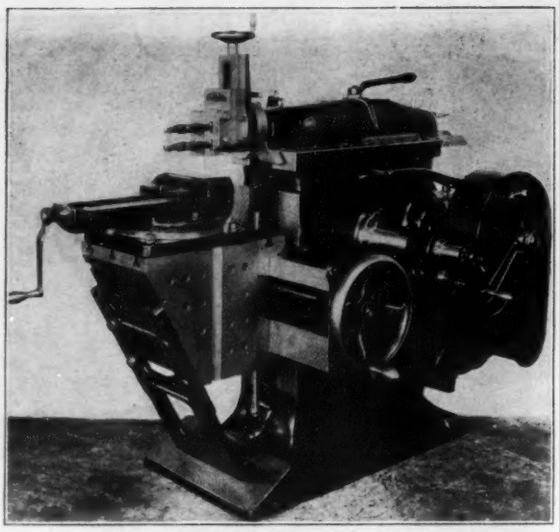
the gear box is completely enclosed, gear and clutch mechanism running in light grease and requiring inspection just once a year.

Track Shoe Is Designed for Heavy Work

No. 174

Caterpillar Tractor Co., Peoria, Ill., has designed a track shoe for use by contractors, loggers and others wherever particularly heavy work is to be experienced. The shoe, shown in the accompanying illustration, is the

result of many years research which tested many materials and methods with varying degrees of success. The result of the experiments was the development of the rolled shoe section. Previous to this innovation both cast steel sections and drop forged shoes were produced. The latter shoe was particularly difficult to produce on account of enormous breakage and wear of the forging die. In the rolled section it is only necessary to cut off, cope drill and notch to produce a finished shoe, and this section lends itself to heat treatment and has all the properties necessary for long life.



No. 177—Gear changing device in crank-type shaper reduces time necessary for changing from job to job

New Side Head Machines Driving Boxes

No. 175

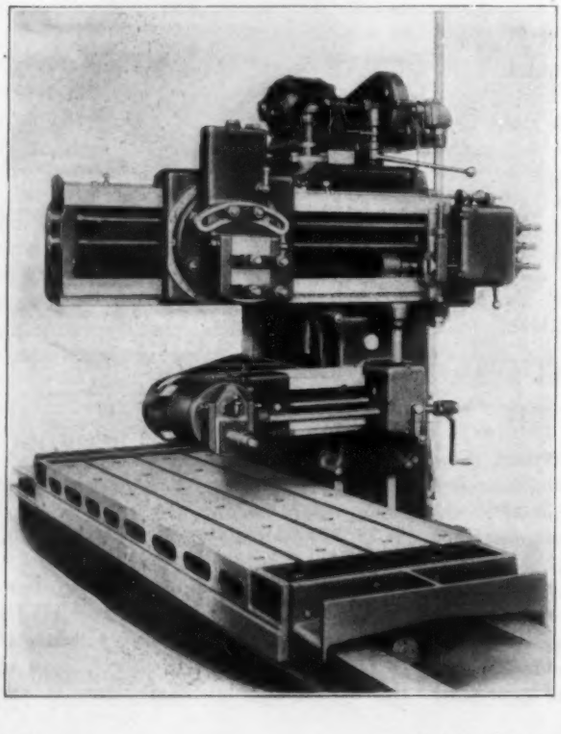
Rockford Machine Tool Co., Rockford, Ill., has developed a new attachment for use with the company's line of shaper-planers, which is in the form of a side head designed for machining locomotive driving boxes. The attachment, shown in the accompanying illustration, is securely anchored to the L-type rail and has a rigid back support clamping to the rear of the column. This head has both a circular and horizontal feed.

One or more of the boxes may be machined at one time, with both the seat for the brass and the bearings for the oil cellars being machined in one setup. All surfaces are machined from the same center line. This attachment has both hand and power feeds as well as rapid traverse in all directions.

Electric Unit Heaters Are Introduced

No. 176

American Foundry Equipment Co., Mishawaka, Ind., recently has developed and placed on the market an electric unit heater, suitable for heating any type of industrial building where an intermittent demand for heat is present and where stoves or boilers would be impractical. The unit heaters may be arranged either stationary or portable and with concealed or recessed radiation; or they may be arranged as blast units for duct air heating. The heating element consists of special alloy heating strips cast integrally with composite fins of aluminum alloy. Several of these heating units are placed vertically in a sheet metal housing and a four-blade fan adjusted at the rear to furnish a blast of air through the heating elements. The front is equipped with adjustable louvers to deflect the warmed air downward. Five stock sizes are provided with kilowatt-hour ratings of 1.8, 3.0, 9.0, 18.0, and 42.0. Intermediate sizes are furnished on request. Fan diameters on the five standard sizes are 6, 6, 10, 16 and 22 inches, respectively. Automatic or hand control is applicable to the heater.



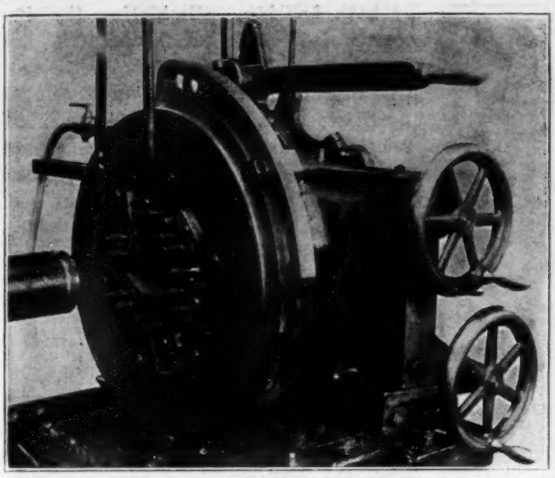
No. 175—One or more locomotive driving boxes may be machined at one time with new side head shaper attachment

Unusual Design Features Crank-Type Shaper

No. 177

American Klopp Shaper Corp., New York, is introducing a crank-type shaper which incorporates a number of innovations in shaper design. The shaper, shown in the accompanying illustration, has a simple gear changing device which reduces the time necessary for changing from job to job. Only two spindles and one pair of gears are operative at any one time. All gears, racks, pinions, worm and worm wheels are of alloy steel, heat treated, and the temper and hardness is localized. The ram, of V-type bearing, is equipped with V-ways, cap and gibs, is one piece, full length and has a bronze liner of single adjustment.

The table is of improved design with extended top. By tests it was determined that a table supported at an angle of 30 degrees permits heavier cuts at the maximum of the stroke. The table can be deflected downward whenever it is necessary to obtain a heavier cut. The design of the base is a departure from ordinary lines adding strength and rigidity to the shaper. The tool head is proportioned to resist tool twist



No. 179—Thread form is omitted on new cutter for grooving pipe and casing for victualic couplings

from heavy cuts with a maximum swivel of 30 degrees.

A speed box of the selective sliding gear type in units comprising two or three speed changes respectively is mounted on the rear of the machine. Only two gears are in mesh at any one time, thus reducing vibration, and wear.

Toggle Press Maintains Uniform Speed

IHP No. 178

Zeh & Hahnemann Co., Newark, N. J., has brought out a new line of pillar toggle presses which, through a peculiar arrangement of the toggle drive, obtain a practically uniform speed of the slide toward the end of the down stroke. This motion is controlled by a nonrepeating clutch. These features make the presses well adapted for extruding collapsible tubes, and also have beneficial effect in doing ordinary embossing work. The presses may be equipped with automatic feed.

The accompanying illustration shows a press which is rated to yield normally a pressure of 150 tons. However, the company states that it has been tested at an overload of 50 per cent or 225 tons. This press weighs 12,000 pounds. The solid frame is reinforced by hot shrunk steel stanchions. It is back geared at the ratio of 6½ to 1 and operates at a speed of 40 strokes per minute.

Special Cutter Grooves Pipe for Couplings

IHP No. 179

Landis Machine Co., Waynesboro, Pa., has developed a new cutter for grooving pipe and casing for victaulic couplings. These cutters, one of which is shown in the accompanying illustration, are placed in the regular chaser holders of the stationary pipe die head which is used for threading standard pipe and casing. The cutter differs from the chaser formerly used in that the thread form is omitted entirely and the face of the cutter is entirely flat except where the grooving offset is located. The depth of the groove is controlled by the height of the offset on the cutter, but variation of the depth of the cut can be obtained by an adjustment of the die head in its closed position.

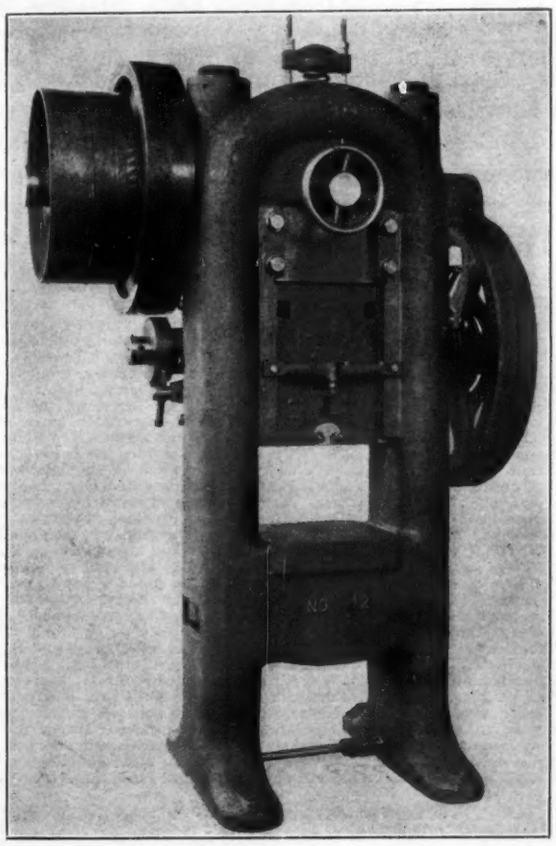
The distance from the end of the pipe to the groove is located by means of two stop blocks which are adjustable and interchangeable. These stop blocks are attached to two cutters, diametrically opposite each other. The cutters when dull, are ground on the cutting end only and moved forward in their holders to compensate for loss of metal due to grinding.

To generate the groove, using these grooving cutters in a pipe machine, the head is first adjusted to pipe size. The die head in the open position is advanced to the work by means of the carriage. When the pipe makes contact against the stop blocks, the cutters are located in the proper position for making the groove. The operator by closing the head feeds the cutters into the pipe, and when the head has reached its closed position the groove is completed.

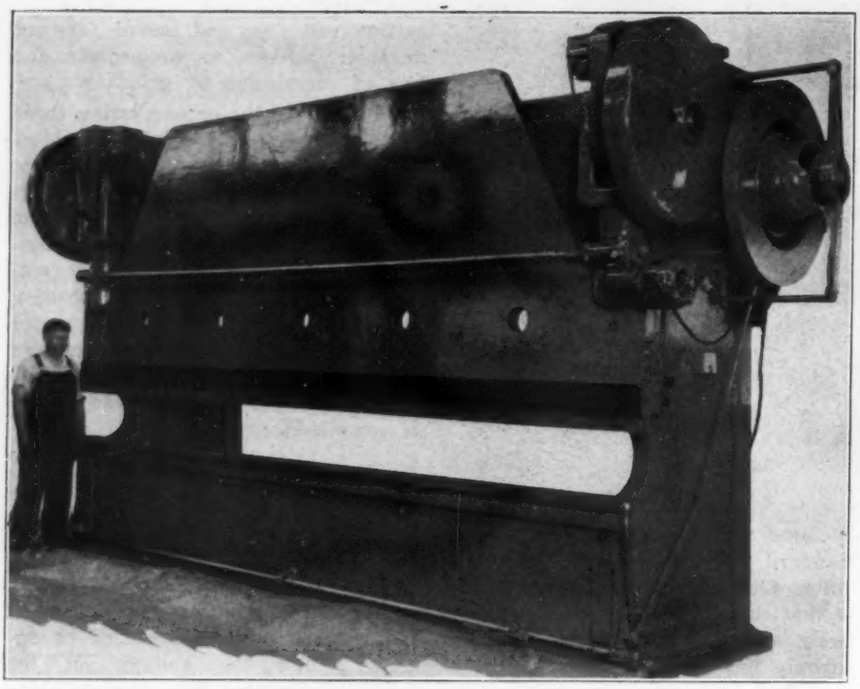
New Connections Provide for Voltage Changes

IHP No. 180

Columbia Electric Mfg. Co., Cleveland, is announcing a simplified method of changing the voltage on the double-commutator type electroplating generator built by the company. The new generators provide for any changes that may be required either because of different uses, or change in voltage desired, by means of external connections which can be changed easily by removing four nuts. This new departure in generator construction gives the advantages of two machines in one. The same generator can be used for both still tank plating and barrel plating. Connections



No. 178—Toggle press is especially suited for extruding collapsible tubes and for embossing work



No. 181—Overall die surface of 16 feet provided in long press brake

are made on the outside of the generators by means of heavy busses without the necessity of changing line connections.

Long Press Brake Has Large Capacity

No. 181

Cincinnati Shaper Co., Cincinnati, recently built an unusually long press brake which has an overall die surface of 16 feet with 14 feet 6 inches between the housings. All the main members are made of rolled steel plates. The brake, shown in the accompanying illustration, has a capacity to form, without overload, right angles in 3/16-inch steel, 16 feet long over 1½-inch die to a 3/16-inch inside radius.

Cylindrical or spherical bearings are provided throughout between load carrying members, particularly the saddle to the ram and the mounting of the bed to the housings. This construction does away with all sharp corners as a source of weakness and allows full and unrestrained action of every member. All loads are transmitted directly up the center line of both housings, eliminating the distortion from eccentric loads. The adjustment of the ram is motorized; the drive is multiple V-belt to the flywheel; all bearings are either antifriction or bronze bushed; ram guides are gibbed in both directions; and lubrication is fully automatic.

Safety Switch Conforms to New Regulations

No. 182

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa., has designed a new line of quick make and break safety switches which conform with the underwriter's new test procedure. In the design of these switches a high degree of compactness has been achieved without the sacrifice of ample wiring room or sufficient voltage spacings.

This line of switches incorporates an arc quencher on the 575-volt sizes and many other advanced features of safety switch design. The arc quenchers, consisting of nickel-plated slotted steel plates held in place by insulating holders, are mounted individually over each jaw and are also easily removed from the front if it is desired to remove them for wiring.

The operating mechanism is actuated by a compression spring which assures a positive quick make and quick break. The possibility of the spring breaking is remote due to the large factor of safety used in its design. In case of a broken spring, external operation of the switch is possible and the broken spring will not come in contact with current carrying parts.

Iron Trade Review's Calendar of New Equipment

Item	Comment	Builder	No.	Date described	Page
Die head	For high-pressure work; made of special steel	National Acme Co.	154	May 29	62
Power press	Drive is adjustable; stamps lighter sheets	Niagara Machine & Tool Works	155	May 29	62
Chamfering machine	Uses internal form-ground hollow mill for chamfering	W. C. Lipe Inc.	156	May 29	63
Billet shears	Heavy-duty shears of welded construction; of alloy steel	Buffalo Forge Co.	157	May 29	63
Chuck	Accurately centers all work; has four-jaw construction	Hannifin Mfg. Co.	158	May 29	64
Sand rammer	Automatic lubrication increases life; has tight packing	Cleveland Pneumatic Tool Co.	159	May 29	64
Storage boxes	Makes parts easily accessible; boxes stack on a slant	All-Steel Equip Co.	160	May 29	64
Bolt threader	All types of bolts and screws formed and threaded	Landis Machine Co.	161	June 5	83
Snagging machine	Large castings are ground easily; has many adjustments	Ransom Grinding Machine Co.	162	June 5	83
Limit switch	Will control many kinds of equipment; entirely automatic	Cutler-Hammer Inc.	163	June 5	84
Buffing lathe	Base cut down straight in front; has variable control	Bridgeport Safety Emery Wheel Co.	164	June 5	84
Press	Has increased slide adjustments; stresses are reduced	E. W. Bliss Co.	165	June 5	84
Screw machine	Accelerated boring provided; performs reaming operations	National Acme Co.	166	June 5	85
Crosshead planer	Many adjustments available; machines large work	Morton Mfg. Co.	167	June 5	85
Mill cut burrs	Variety of shapes and sizes made of high-carbon steel	Keller Mechanical Engineering Corp.	168	June 5	86
Friction chuck	For tapping and nut and stud setting; 3-inch capacity	Apex Machine Co.	169	June 5	86
Trolley	Built especially for foundry work; resists wear	Louden Machinery Co.	170	June 5	86
Welding rod	Designed for lighter sheets; makes all types of welds	Lincoln Electric Co.	171	June 5	86
Spectroscope	Requires no adjustments; operated by electricity	Adam Hilger Ltd.	172	June 12	71
Rotary machine	Three speeds are provided; has many applications	Peck, Stow & Wilcox Co.	173	June 12	71
Track shoe	Built for heavy-duty work; made of rolled section	Caterpillar Tractor Co.	174	June 12	71
Side head	Shaper attachment will machine locomotive driving boxes	Rockford Machine Tool Co.	175	June 12	72
Electric unit heater	Will heat any type of building; has alloy heating strips	American Foundry Equipment Co.	176	June 12	72
Shaper	Many improvements built into new crank-type machine	American Klopp Shaper Corp.	177	June 12	72
Toggle press	Nonrepeating clutch controls motion; has uniform speed	Zeh & Hahnemann Co.	178	June 12	73
Cutter	Victualic couplings grooved; thread form is omitted	Landis Machine Co.	179	June 12	73
Generator connections	Convenient connections permit changes in voltage	Columbia Electric Mfg. Co.	180	June 12	73
Press brake	Is of unusually large size; distortion eliminated	Cincinnati Shaper Co.	181	June 12	74
Safety switch	Conforms to underwriter's new test procedure	Westinghouse Electric & Mfg. Co.	182	June 12	74

Editorials

Cost of Manpower Runs High

ALTHOUGH alert managers always are seeking improvements and new methods which will reduce manufacturing costs, operators of small plants frequently overlook savings to be effected in materials handling. A widespread feeling seems to exist that this problem is one of importance only to large plants engaged in mass production. At the outset it must be admitted that the smaller shops do not lend themselves well to extensive mechanical handling, nevertheless, some worthwhile improvements can be brought about through systematic study.

The author of a paper read before the recent convention of the American Foundrymen's association suggested three simple and basic rules for improving materials handling: (1) General use of electric or mechanical power; (2) routing work in as nearly a straight line as possible through the plant; and (3) waist-high movement of all materials upon which labor is expended. A workman paid 50 cents an hour can move a fifth of a ton one mile at a cost of 50 cents, or at the rate of $2.50 per ton-mile. If we approximate one man at about one-tenth horsepower at 50 cents per hour, or $5 per horsepower hour, manpower for mass weight movement is tremendously expensive by all accepted standards. Thus, the element of labor costs presents a fertile field for investigation, particularly when the product has a high proportion of labor cost in it.

The kilowatt-hour is approximately 1 1/3 horsepower and a manpower is one-tenth of a horsepower. In terms of the electric unit, a manpower is about one-thirteenth of a kilowatt. The latter can be purchased in many localities for 1.5 cents or 12 cents for an 8-hour day. On the same basis, a manpower day is one thirteenth of 12 cents or about 1 cent. The author therefore concludes, and sanely so, that at this ratio man cannot compete with electricity. Workmen, he maintains, should be employed to use intelligence rather than muscular force.

Road Building as a Steel Outlet

IN ADDITION to growing tonnages of steel absorbed in road building reinforcement, culvert and bridge work, the makers of graders, excavating equipment and other road building machinery are expanding their efforts as a result of the hard-surfaced mileage being laid down in virtually all states. Highway contracts awarded during the first quarter, this year, in an area covering more than three-fourths of the United States, were valued at $114,000,000, as against $51,000,000 in 1929.

Signing of the Dowell bill recently by President Hoover, assuring federal and state highway expenditures in the next three years of more than $750,000,000, beginning July 1, indicates something of future prospects. Latest available figures show road building in the period 1923-1927 increased the value of road building equipment 14.3 per cent in that time. Estimates made recently by Dr. Julius Klein, assistant secretary of commerce, show more than 3,000,000 miles of public roads, with 660,000 miles of surfaced roads.

The destiny of the road equipment industry as a consumer of steel appears decidedly promising, with no apparent limit to the possibilities of the market.

Generating Electricity Near Mines

DRAW a line across the United States 17 times from New York to San Francisco and you will have the approximate length of electric power transmission lines, above 22,000 volts, constructed in this country in the past year. Electric service has been extended to every city of 5000 or more inhabitants; to 97 per cent of all towns of 1000 to 5000 population; to 50 per cent of all villages of 250 to 1000 population, and to more than 25 per cent of all communities with less than 250 persons.

Consumption of electrical energy in the United States has been increasing at a rate nearly four times that of the gain in population. In the last five years more than 4000 towns were supplied with electric service that were never reached before.

Utilization of electric power for factory purposes increased 12 per cent in 1929; three-fourths of all industrial power now is electrical, and of this two-thirds is purchased from light and power companies.

These are some of the high spots of recent developments in the electric power industry which are tending to decentralize manufacturing

establishments. A degree of flexibility and mobility has been attained which indicates the trend will be away from the crowded centers of population, with their inevitable high tax rates, toward the smaller communities and the fringes where land is comparatively cheap and taxes are at a minimum. This diffusion in time will exert a considerable influence on transportation.

Power is generated so much more economically in large central stations that the privately owned plants are gradually disappearing. The question of where these central plants shall be located has been given much attention by engineers and capitalists, and the best locations have been found to be near the load, or consumption, centers, but not so close as to be within the high tax zones. In the location of power plants there are three prime considerations: load center, coal and water.

Because for every ton of coal burned 400 to 600 tons of water must be consumed by the modern generating stations, the trend is not toward locating the plants at the mouth of coal mines, but toward load centers and water supply. Power line losses also are a determining factor. At present coal can be hauled hundreds of miles and used most economically where water is abundant.

Where coal, water and load center meet there is the ideal combination, seldom found. Also, with the continued growth of interconnected transmission systems, power companies see the time when additional generating stations will be built nearer mines, but mainly as auxiliaries. The recent decision of the Union Carbide & Carbon Corp. to build a power plant adjacent to a mine in West Virginia serves to emphasize the trend toward load and water supply centers.

Organizing the Power of Suggestion

ORGANIZED power wins, whether it be in manufacturing, selling or any other line of group endeavor. Suggestion systems which are slowly but surely increasing in American industries represent an effort to organize and stimulate group thought and action. Research in materials, manufacturing processes or sales methods requires organization for effectiveness. Many manufacturers have appreciated the fact that organization is required to obtain employes' ideas; hence their suggestion systems.

Theoretically it should not be necessary to have a "system" for obtaining employes' ideas, but practically it has been found useful and in many instances profitable. A shop employe may have a selling idea, or a suggestion for a new product, and where there are large numbers of employes figuratively "under the same roof" good ideas are bound to spring up when the stimulus is there. The suggestion system makes it reasonably certain to an employe that he will be rewarded for keenness of observation, for generally it is administered by a committee judging impersonally.

One of the largest manufacturing companies in the United States received 27,991 suggestions from employes in 1929. The number accepted was 31.5 per cent of the total. For those accepted the average payment was $11.70, with as much as $1000 for one suggestion. The total payment was $104,272. This company's system has been in operation many years, and that it has been a powerful incentive to thought is evidenced by the fact 56 per cent more suggestions were received in 1929 than in 1928.

A smaller company beginning in 1921 with 28 suggestions received 518 in 1929, of which 24 per cent were of sufficient merit for adoption.

The system is not without fault; the value of a suggestion may be subject to dispute, and a rejected suggestion may cause discord. Organizing the power of suggestion is a challenge to administrative ability.

British Steelmaking Centralizes

UNITING their facilities to produce to the best advantage and doing away with destructive duplication and competition, steel producers of Great Britain have been moving gradually toward a complete rationalization in strong hands.

From the apparently aimless mergers formed at first in this movement, a pattern now is becoming evident and four strong groups are emerging, each dominating a geographical area where products have to a great degree a special type.

Necessity has dictated these amalgamations, to meet changing economic conditions in Britain and in the world. Continental competition has become severe under new conditions created by mergers and cartels, and British producers have found it necessary to unite for economy and efficiency.

The outcome of this movement can be seen dimly as definite lines of cleavage begin to appear. The tendency is for a single large corporation to form in the Teesside, in Scotland and in South Wales, but the fourth geographical division, Yorkshire and Lancashire, does not lend itself so well to a single unit and probably will have several strong companies.

The small producer appears under a handicap in present-day competition in world-trade. What results this condition will have remain to be seen. Both labor and capital have an interest in the outcome, which depends on fundamental factors forcing the present movement to centralization.

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Controlling Grain Flow in Steel Forgings. Page 57.

Pipe Orders and Freight Rates in Spotlight

JAMES A. FARRELL was right when he forecast at the meeting of the American Iron and Steel institute, May 9, an unusually good volume of business in pipe for this summer and fall. So many awards and such large tonnages have developed recently that it has been difficult for buyers and sellers to keep a record of them all. To eliminate duplications and present a clear summary of what has been done and what is in prospect IRON TRADE REVIEW *has prepared the article on page 99. Major awards have totaled 500,000 to 550,000 tons.*

As the usual aftermath of sweeping iron and steel freight rate changes, such as recently put in effect, protests against alleged discrimination have appeared in some districts and business organizations are grappling with the problem. These developments are covered in the article on page 100.

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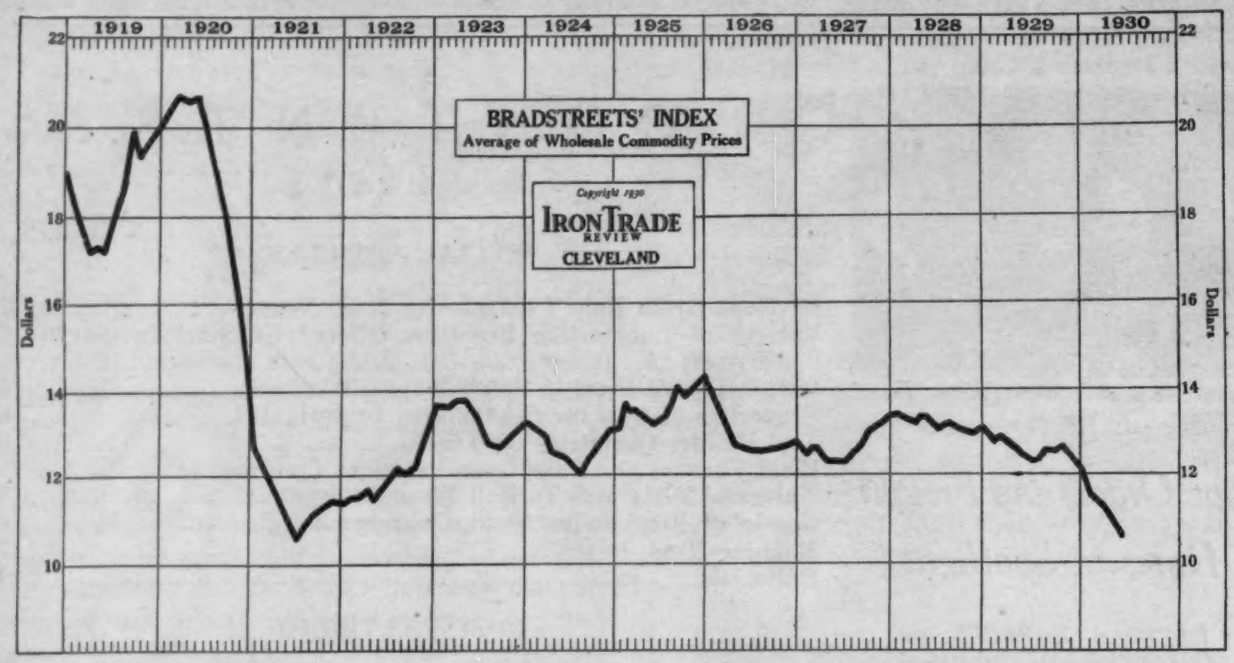
The Business Trend



Business Drifting Toward Turning Point

MORE and more observers of the business situation are discounting what may happen in June, July and August and are looking to the autumn months for the first marked recovery from the present unsatisfactory situation. The seasonal decline in activity is to be expected, but this year it has been somewhat permature in certain branches of the iron and steel industry.

THIS is true in the production of the basic materials of industry. In 1929 steel ingot output disregarded seasonal influences and continued at a high rate through the summer. This year ingot production has been tapering off since February, and may follow the trend of 1928, when the low point was reached in June. Pig iron output in 1930 is corresponding more closely to normal trends, with volume decidedly below that of 1929, but slightly above that of 1928. By a curious coincidence the rate of steel ingot and pig iron operations were almost identical in May at about 74 per cent of the industry's present available capacity.

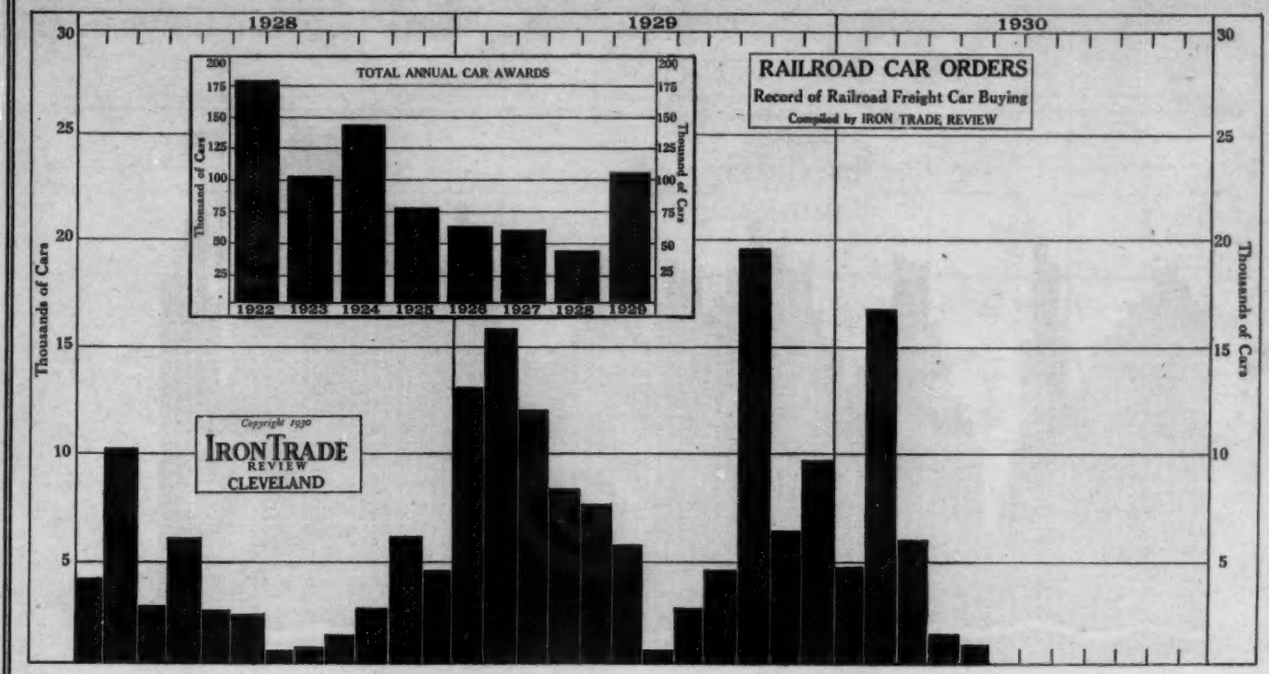
MORE forecasts are heard that improvement may be expected to begin in thirty to sixty days, gradually working up to a satisfactory peak—considering all things—in the fall.

THE downward march of wholesale commodity prices continues, indicating that stability in the relation of supply to demand has not been reached. Bradstreet's index is still receding, the figure in May being $10.7741 as against $10.9393 in April. The index is approaching the lowest point in recent history, which was registered in June, 1921, when the index reached the low mark of $10.6169.

PRICES in the steel industry continue to feel the depressing influences which have affected practically all other commodities. Only the lack of orders for sizable tonnage has prevented valley pig iron prices from following the downward swing of iron quotations in other sections of the country. Semifinished steel, after gyrating, seems settled at $2 below the first quarter.

A RAY of optimism is afforded by the monthly record of commercial failures, which in May were fewer in number than in any previous month this year. Liabilities, however, increased. Orders for freight cars in May were unusually light, as were steel demands from many other consuming fields. The inflow of orders for steel for pipe lines, appearing within the past week, represent a welcome exception to the general rule of reduced buying.

The Business Trend

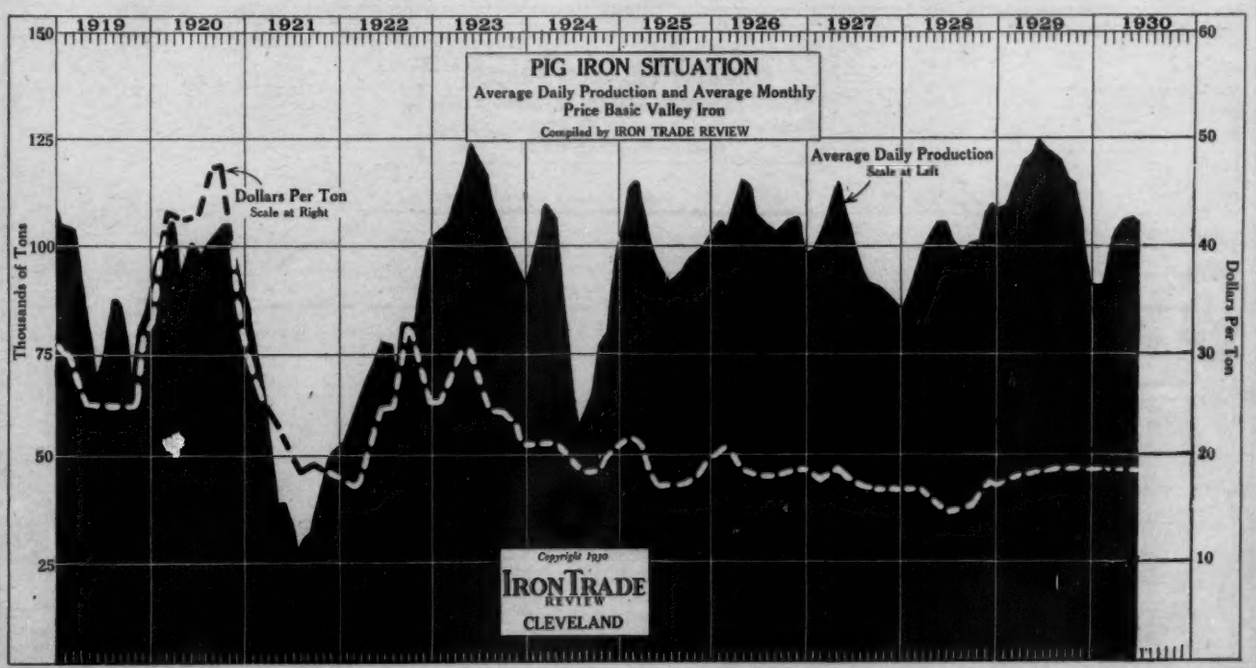


Car Orders Are Light

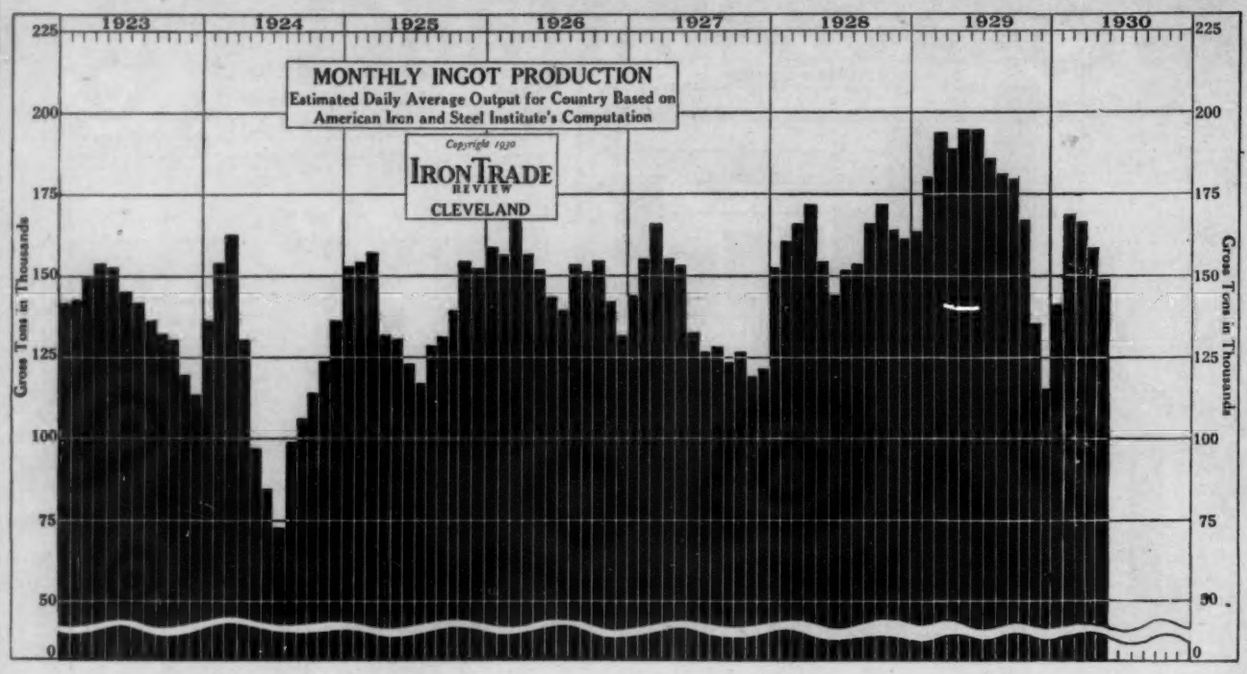
PURCHASES of freight cars in May dropped to the abnormally low figure of 1286, bringing the total for five months of 1930 to 31,076, as compared with 56,930 for the corresponding period of 1929 and 25,912 in 1928. Ordinarily July is the low point of the year in car buying and June is also one of the lightest months of the year. However, even if no cars are bought in June, the first-half record for 1930 would be ahead of that for 1928, which was the lowest total in recent years.

Pig Iron Output Turns

AFTER mounting for four consecutive months, pig iron production in May turned downward. Daily average output last month was 104,509 gross tons, as compared with 106,371 in April and 104,930 in March. Thus far the trend of 1930 production has followed that of 1928 very closely, but of course is sharply below that of 1929. The price of basic iron at valley furnaces still remains $18.50, although quotations at other points have dropped from levels that governed earlier in the year.


1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930
PIG IRON SITUATION
Average Daily Production and Average Monthly Price Basic Valley Iron
Compiled by IRON TRADE REVIEW
Dollars Per Ton
Scale at Right
Average Daily Production
Scale at Left
Thousands of Tons
Dollars Per Ton
Copyright 1930
IRON TRADE REVIEW
CLEVELAND

The Business Trend

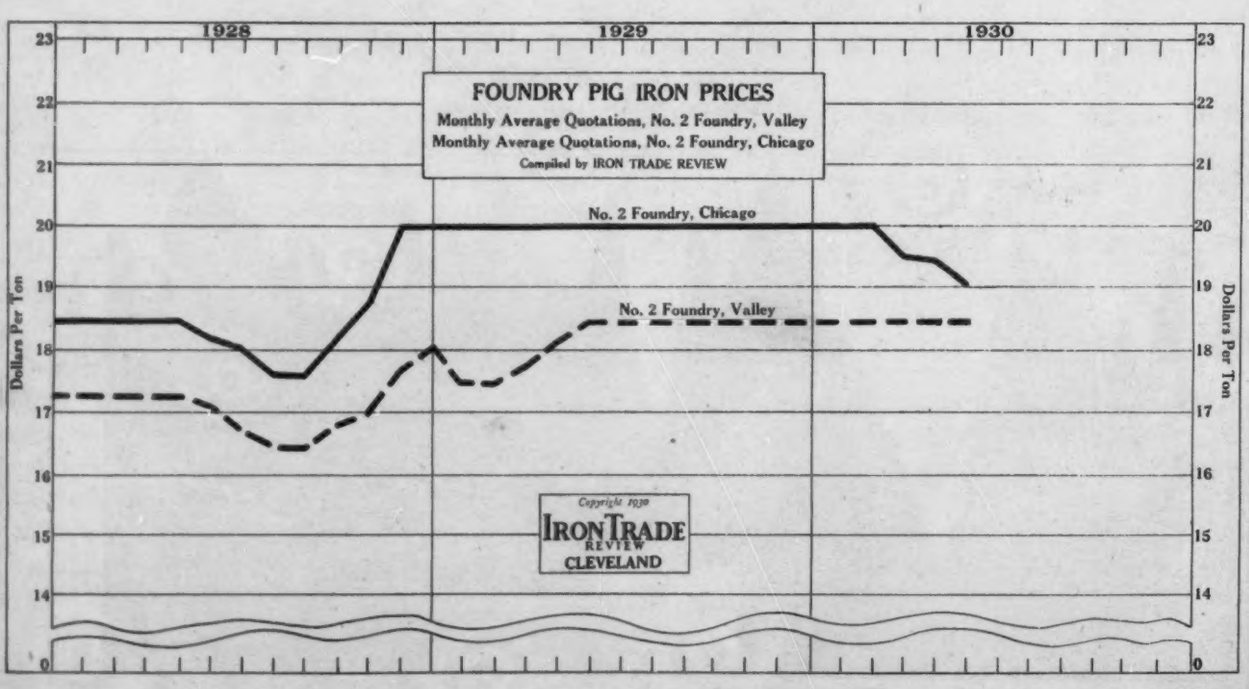


Steel Ingot Production

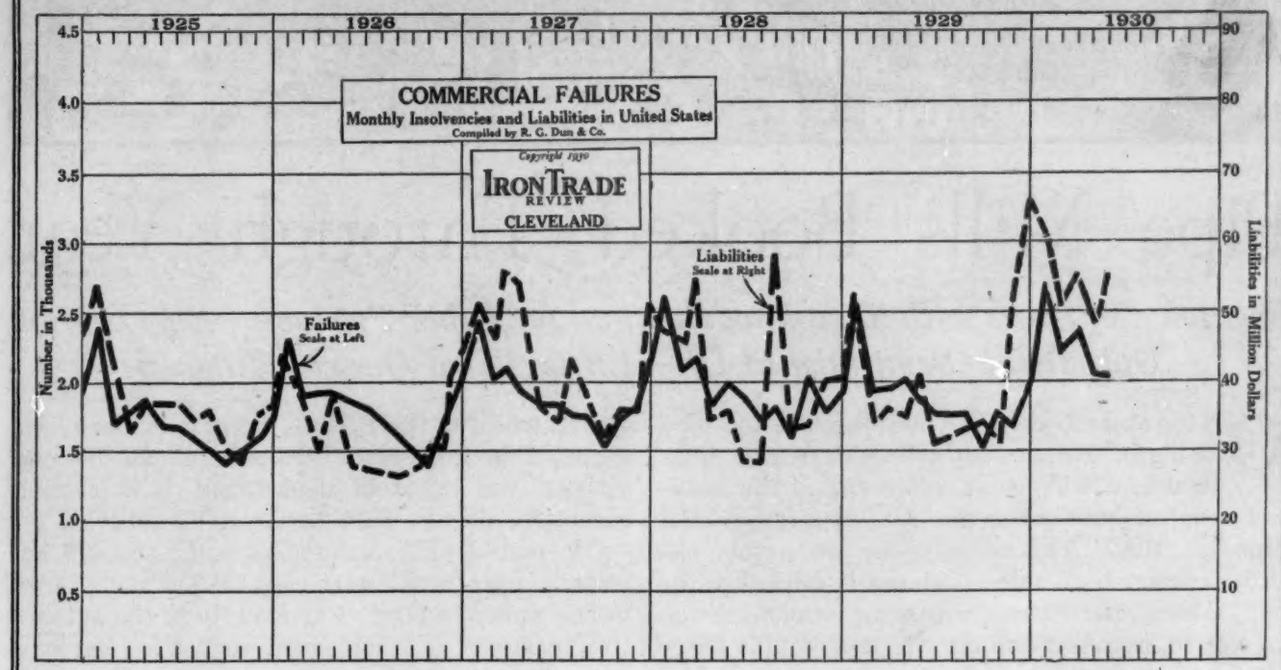
FROM a peak of 169,930 tons in February, the approximate daily average of steel ingot production has declined by gradual steps to 149,066 tons, which is still well above the average for January, which was 140,596 tons. May operations were at the rate of 74.45 per cent of capacity, according to the American Iron and Steel institute's method of calculation. This compares with 81.25 per cent in April, 84.12 in March and 99.59 in May, 1929, the latter being an unusually high record.

Pig Iron Quotations

FOUNDRY pig iron quotations, after remaining at fixed points for more than half a year, in recent months have declined gradually. No. 2 foundry iron, Chicago, which remained at $20 from November, 1928 until March, 1930, dipped to $19 in May. June quotations are as low as $18.50. No. 2 foundry, valley, still holds at $18.50, largely because tonnage in sufficient quantity to induce makers to cut to lower levels has not appeared. The tone of the market continues weak, but has not induced buying.



The Business Trend

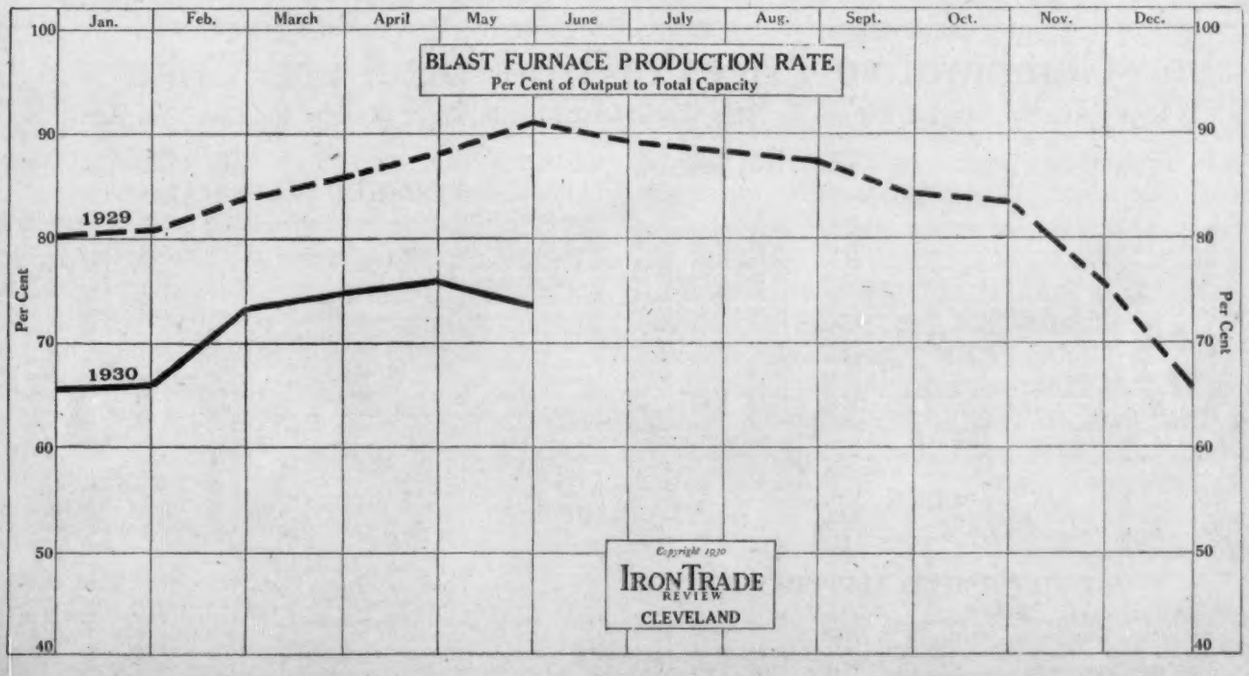


Fewer Companies Failed

COMMERCIAL failures in May were less in number than in any previous month in 1930, but liabilities rose sharply. According to R. G. Dun & Co., business failures in May numbered 2179 as compared with 2198 in April. Liabilities on defaults were $55,541,462 compared with $49,059,308 in the previous month, which was the lowest point thus far in 1930. The May total is slightly under that of March and considerably below the high point that was reached in January.

Blast Furnace Activity

WITH three fewer blast furnaces active on May 31 than were in blast at the end of April, blast furnace operations in May showed a slight decline. This was not unexpected, inasmuch as the April situation indicated a turning point was near. Production in May was 74.2 per cent of capacity, compared with 75.4 in April and 74.5 in March. At the end of May 179 stacks were in blast, as against 182 on April 30. One year ago 220 blast furnaces were in blast, and two years ago, 199.



Pipe Mills Booked Through Year

Position Contrasts with Shrinking Demand for Other Products—East Is More Optimistic—Semifinished Off—Little Third Quarter Interest

OIL, gas and gasoline lines booked by pipe mills in the past few weeks aggregate 500,000 to 550,000 tons, representing the heaviest buying movement in the history of the pipe industry. This tonnage by no means exhausts demand, as some business is offered without takers, but it does commit producers of lapwelded, seamless and electric welded pipe practically through 1930.

Buttweld Does Not Share Heavy Demand

National Tube Co., a Steel corporation subsidiary, is booked solid the remainder of the year at its McKeesport, Pa., and Lorain, O., plants. Mills of the Republic Steel Corp. and Youngstown Sheet & Tube Co. have no free capacity before Nov. 1. The A. O. Smith Corp., Jones & Laughlin Steel Corp. and smaller producers are engaged well into the fall.

Before pipe mills at present is a 55,000-ton inquiry from the Standard Oil Co. of New Jersey. Spang, Chalfant & Co. in the past week booked an order for 18,200 tons. It develops that the 50,000 tons for the Phillips Petroleum Corp. was awarded the Republic Steel Corp. To all this pipe activity the buttweld department is a notable exception, due in part to slack building.

Other steel products, and raw and semifinished materials as well, continue in sharp contrast to this sweep in pipe. Particularly in the automotive, railroad and implement industries have requirements declined in the past week, with an accompanying easing of production. Only sporadic interest is displayed in the third quarter, although it is only a fortnight distant, and consumers generally are coming down to midyear with minimum inventories.

See Improvement in 60 to 90 Days

Whether the industry is rapidly liquidating the weakness in the consuming situation is moot. In the Middle West, where automotive, railroad and implement tonnage is predominant, producers profess their inability to foresee improvement immediately ahead. Their most optimistic opinion does not envision a good market before fall. They

Comparative Prices of Iron, Steel and Coke

Representative Market Figures for This Week, Last Month, Three Months and One Year Ago

	June 11 1930	May 1930	March 1930	June 1929
PIG IRON				
Bessemer, del. Pittsburgh	$20.76	20.76	20.76	20.76
Basic, valley	18.50	18.50	18.50	18.50
Basic, eastern del. eastern Pa.	18.76	18.75	18.80	20.25
No. 2 foundry, del. Pittsburgh	19.76	19.76	19.76	19.76
No. 2 foundry, Chicago	18.50	19.00	19.50	20.00
*Southern No. 2, Birmingham	14.00	14.00	14.00	14.40
**No. 2X, Virginia Furnace	18.25	18.25	18.25	20.00
**No. 2X, Eastern del. Philadelphia	20.26	20.26	20.76	22.76
Malleable, valley	19.00	19.00	19.00	19.00
Malleable, Chicago	18.50	19.00	19.50	20.00
Lake Superior, charcoal, del. Chicago	27.04	27.04	27.04	27.04
Gray forge, del. Pittsburgh	19.13	19.13	19.13	19.13
Ferromanganese, del. Pittsburgh	103.79	103.79	103.79	109.79

*1.75 to 2.25 silicon. For local delivery. Northern shipments based on $12.00 to $13.00, Birmingham. **2.25 to 2.75 silicon.

COKE				
Connellsville furnace, ovens	2.50	2.55	2.60	2.75
Connellsville foundry, ovens	3.50	3.50	3.50	3.75
SEMIFINISHED MATERIAL				
Sheet bars, open-hearth, Youngstown	$1.00	$2.20	$3.00	$5.75
Sheet bars, open-hearth, Pittsburgh	31.00	32.20	33.00	35.75
Billets, open-hearth, Pittsburgh	31.00	32.20	33.00	35.75
Wire rods, Pittsburgh	36.00	36.40	38.00	42.00

	June 11 1930	May 1930	March 1930	June 1929
FINISHED MATERIAL				
Steel bars, Pittsburgh	1.75	1.75	1.85	1.95
Steel bars, Chicago	1.85	1.85	1.90	2.05
Steel bars, Philadelphia	2.04	2.04	2.12	2.27
Iron bars, Chicago	1.90	1.90	1.95	2.05
Shapes, Pittsburgh	1.70	1.75	1.80	1.95
Shapes, Philadelphia	1.76½	1.77	1.81	2.06
Shapes, Chicago	1.80	1.85	1.90	2.05
Tank plates, Pittsburgh	1.70	1.75	1.85	1.95
Tank plates, Philadelphia	1.90½	1.91	2.00	2.15
Tank plates, Chicago	1.80	1.85	1.90	2.05
*Sheets, blue anl., No. 13, Pittsburgh	2.05	2.15	2.25	2.20
Sheets, black, No. 24, Pittsburgh	2.55	2.55	2.65	2.95
Sheets, gal., No. 24, Pittsburgh	3.20	3.25	3.30	3.65
Sheets, black, No. 24, Chicago	2.70	2.70	2.80	3.10
*Sheets, blue anl., No. 13, Chicago	2.30	2.35	2.50	2.50
Sheets, galvanized, No. 24, Chicago	3.35	3.35	3.45	3.85
Plain wire, Pittsburgh	2.30	2.35	2.40	2.50
Wire nails, Pittsburgh	2.15	2.15	2.30	2.65
Tin plate, per base box, Pittsburgh	5.25	5.25	5.25	5.35

*Comparison for June, 1929, is with old blue annealed base, No. 10.

SCRAP				
Heavy melting steel, Pittsburgh	15.25	15.40	16.60	18.30
Heavy melting steel, eastern Pa.	13.25	13.38	14.95	16.25
Heavy melting steel, Chicago	12.00	12.55	13.20	14.95
No. 1 wrought, eastern Pa.	15.25	15.38	15.25	16.25
No. 1 wrought, Chicago	11.75	12.70	13.50	15.40
Rails for rolling, Chicago	14.50	14.90	15.00	17.50

Current Prices for Rolled Steel Products

STEEL PLATES

Pittsburgh, base	1.70c
Philadelphia, del.	1.90½c
New York, del.	1.98c to 2.03c
Boston, del.	2.10c to 2.15c
Chicago, base	1.80c
Cleveland, delivered	1.89c
Lackawanna, N. Y., base	1.80c
Birmingham, base	1.85c to 1.90c
Coatesville, Pa., base	1.80c
Pacific Coast, c.i.f.	2.25c
St. Louis, del.	2.12c
Detroit, del.	1.96½c

STRUCTURAL SHAPES

Pittsburgh, base	1.70c
Philadelphia, del.	1.76½c to 1.91½c
New York, del.	1.90½c to 2.10½c
Boston, del.	2.03½c to 2.13½c
Chicago, base	1.80c
Cleveland, delivered	1.89c
Lackawanna, N. Y.	1.80c
Birmingham, base	1.85c to 1.90c
Pacific Coast, c.i.f.	2.35c
Detroit, del.	1.96½c

BARS

SOFT STEEL

Pittsburgh, base	1.75c
Chicago, base	1.85c
Birmingham, base	1.90c to 1.95c
Lackawanna, N. Y., base	1.85c
Pacific Coast, c.i.f.	2.35c
Cleveland, base, local mills	1.75c to 1.80c
Cleveland, del., outside mills	1.82½c
Philadelphia, del.	2.04c to 2.09c
New York, delivered	2.08c
Boston, delivered	2.15c
Detroit, del.	2.00c
Pittsburgh, cold finishing	1.90c
Pittsburgh, forging quality	2.00c

RAIL STEEL

Chicago Heights	1.75c to 1.80c
Eastern mills	1.85c to 1.95c

IRON

Chicago, base	1.90c
New York, delivered	2.03c
Philadelphia, delivered	1.99c
Pittsburgh, refined	2.75c to 4.25c

REINFORCING

Pittsburgh, billet cut lengths	2.00c to 2.05c
Stock lengths from mill	1.75c to 1.80c
Chicago, billet, 30 tons and over	2.00c
Under 30 tons	2.40c
Chicago, rail steel	1.65c to 1.70c
Road and bridge work	1.80c
Philadelphia, cut lengths	2.14c

CORROSION, HEAT RESISTANT ALLOYS

Base, Pittsburgh

18 per cent chrome, 8 per cent nickel

Sheets....35.00c; plates....31.00c; bars....28.00c

	A	B	C	D
Bars	19c	20.5c	23c	28c
Plates	22c	23.5c	26c	31c
Sheets	26c	27.5c	30c	35c
Hot strip	19c	20.5c	23c	28c
Cold strip	28c	29.5c	32c	37c

Carbon 0.12 and under; no nickel. A has chrome 15% and under, B over 15/18% inc., C over 18/23% inc., D over 23/30%.

SHEETS

SHEET MILL BLACK, No. 24

Pittsburgh, base	2.50c to 2.55c
Detroit, delivered	2.76½c to 2.81c
Philadelphia, delivered	2.84c
Gary, Indiana Harbor	2.65c
Chicago, delivered	2.70c
Birmingham, base	2.75c
St. Louis, del.	2.97c

TIN MILL BLACK NO. 28

Pittsburgh, base	2.80c to 2.90c
Gary, base	2.90c to 3.00c

GALVANIZED NO. 24

Pittsburgh, base	3.20c
Philadelphia, delivered	3.44c
Gary, Indiana Harbor	3.30c
Chicago, delivered	3.35c
Birmingham, base	3.40c
St. Louis, del.	3.62c

BLUE ANNEALED SHEETS NO. 13

Pittsburgh, base*	1.95c to 2.05c
Chicago, district mills	2.25c to 2.35c
Chicago, delivered	2.30c to 2.40c
St. Louis, delivered	2.57c
Philadelphia, delivered	2.44c
Birmingham	2.35c

*Minimum price is on continuous mill product.

BLUE ANNEALED PLATES, NO. 9-10

Pittsburgh, base*	1.80c to 2.00c
Chicago, district mills	2.10c to 2.20c
Chicago, delivered	2.15c to 2.25c
Philadelphia, delivered	2.29c
St. Louis, delivered	2.42c
Birmingham	2.20c

*Minimum price is on continuous mill product.

AUTOMOBILE NO. 20

Pittsburgh, base	3.60c to 3.70c
Detroit, delivered	3.86½c to 3.96½c

FURNITURE NO. 24

Pittsburgh	3.80c

(Turn to the following page)

are witnessing sharp curtailment in the implement industry, fear automobile production will be low in July and possibly also in August, and are coming to the end of their railroad equipment commitments with fresh inquiry negligible.

In the East, however, important factors believe some betterment will appear in thirty to sixty days, with a gradual increase culminating with good business in the fall. Supporting this position is the excellent condition of the pipe industry, moderate demand for structural material, a possible 10 per cent increase in tin plate consumption this year due to good crops on the Pacific coast, and an expected quickening in general business.

Operations Are Down Slightly

It is being realized that increasingly the comparison with 1929 will become more favorable to 1930, as last year May was the peak and the remainder of the year a retreat. Any arresting of the present recession in operations would therefore mitigate this year's showing. Steelmaking operations this week are 75 per cent for the Steel corporation, 67 per cent for independents and 71 per cent for the industry, a slight decline for all. Declines are the rule in all districts, especially at Youngstown. Prices have not gained strength appreciably but they are less irregular. On steel plates and shapes 1.70c, Pittsburgh, and on steel bars 1.75c Pittsburgh, continue representative, with some concessions. Sheet producers have announced, for third quarter, 3.70c, Pittsburgh, on autobody, 3.20c on galvanized, 2.55c on black, 2.15c on blue annealed sheets and 2.00c on blue annealed plates. Current business in some grades is being taken at less. Semifinished steel is off $1 per ton, to $31, Pittsburgh. Southern iron is offered in the North as low as $12, Birmingham. Silvery iron is down.

Structural Awards Top Last Week

Occasional high lights in the heavy steel lines neutralize the pronounced dullness in sheets, strip, wire and other light products. Chicago plate mills expect to ship 200,000 tons in July and August for conversion into pipe. May tonnage entered by an important producer at Pittsburgh was the largest since August, 1929. Bar orders of a Pittsburgh producer last week were the heaviest in five weeks. The decline of 7 per cent in Steel corporation unfilled orders as of May 31, in spite of record pipe booking, was due to heavy shipments. Structural steel awards this week totaled 31,000 tons, compared with 21,283 tons last week.

German producers of steel are considering cutting wages 10 per cent and passing the saving along to buyers, as a means of aiding demand.

Composite Market Averages

Based on Pig Iron, Billets, Slabs, Sheet Bars, Wire Rods, Steel Bars, Plates, Structural Shapes, Black, Galvanized and Blue Annealed Sheets, Tin Plate, Wire Nails and Black Pipe

This week (June 11, 1930)	$33.52
Last week (June 4, 1930)	33.64
One month ago (May, 1930)	33.73
Three months ago (March, 1930)	34.95
One year ago (June, 1929)	36.96
Ten years ago (June, 1920)	67.89
Fifteen years ago (June, 1915)	23.74

A reaction in semifinished steel lowers the IRON TRADE REVIEW composite 12 cents this week, more than neutralizing the temporary gain of last week. This index now stands at $33.52, 9 per cent below last June.

Current Rolled Steel Prices

PRICES IN CENTS PER POUND UNLESS OTHERWISE INDICATED

Tubular Products Quoted on Last Editorial Page—See Preceding Page for Other Products

HOOPS, BANDS, STRIPS

Hot strip, to 6-in., Pitts.	1.80c
Delivered, Detroit	2.01½c
Hot strip 6¼ to 24-in., Pitts.	1.70c
Delivered Detroit	1.91½c
Hot strip, bands 6 in. and under, Chicago	1.90c
Do. 6¼ to 24	1.80c
Cooperage stocks, Pittsburgh	2.00c to 2.10c
Do. Chicago	2.10c to 2.20c
Cold rolled strip, hard coils, 16 inches and under by 0.100-inch and heavier, base Pitts., Cleve. (3 tons and over)	2.45c to 2.55c
Delivered, Detroit	2.65c to 2.75c
Worcester, Mass., (3 tons and over)	2.60c to 2.70c

ALLOY STEEL

Hot Rolled—F.o.b. Mills

Alloy Quality Bar Base is 2.65c

S.A.E. Series Number	Alloy differentials	Net 100 lb. bars
2000	0.25	$2.90
2100	0.55	3.20
2300	1.50	4.15
2500	2.25	4.90
3100	0.55	3.20
3200	1.35	4.00
3300	3.80	6.45
3400	3.20	5.85
4100 0.15-0.25 Mo.	0.50	3.15
4100 0.25-0.40 Mo.	0.70	3.35
4600 0.20-0.30 Mo. 125-1.75 Ni.	1.05	3.70
5100 0.60-0.90 Cr.	0.35	3.00
5100 0.80-1.10 Cr.	0.45	3.10
5100 Chrome Spring	0.20	2.85
6100 Bars	1.20	3.85
6100 Spring Steel	0.95	3.60
Chrome Nickel Vanad'm	1.50	4.15
Carbon Vanadium	0.95	3.60
9250 (flats)	0.25	2.90
9250 (rounds, squares)	0.50	3.15

Hot rolled alloy billets 4 x 4-inch and over take same prices per gross ton as same specification alloys bars per net ton. Sizes under 4 x 4 to 2½ in. x 2½ in. inclusive sold on bar basis plus steel bar card extras for size. Sizes under 2½ in. x 2½ in. take bar price on net ton basis.

COLD FINISHED STEEL

Bars, drawn or rolled, Pitts., Chicago and Buffalo	2.10c
Do. Cleveland	2.00c to 2.10c
Do. delivered, Detroit	2.20c
Shafting (turned, polished) Pittsburgh, Buffalo	2.10c
Shafting (turned, ground) mill (Depending on size, 1 3/16 to 7-inch)	2.45c to 2.90c

WIRE PRODUCTS

F.o.b. Pittsburgh, Cleveland base

(Per 100 pound keg)

(To Jobbers—Merchant Trade)

Standard wire nails	$2.15 and 2.25
Cement coated nails	2.15 and 2.25
Galvanized nails	4.15 and 4.25

(Per pound)

Polished staples	2.60c and 2.70c
Galvanized staples	2.85c and 2.95c
Barbed wire, galvanized	2.80c and 2.90c
Annealed fence wire	2.30c and 2.40c
Galvanized wire	2.75c and 2.85c

Woven wire fencing, retailers, Pittsburgh-Cleveland, net ton $65.

(To Manufacturing Trade)

Bright plain wire, 6 to 9 gage	2.30c
Spring wire	3.30c
Wire, delivered Detroit	2.53½c
Nails, delivered Detroit	$2.38½

Joliet, DeKalk and Waukegan, Ill., Anderson, Ind., and Chicago prices $1 per ton over Pittsburgh-Cleveland base on products made there. Duluth and Worcester, Mass., $2 higher; Fairfield, Ala., $3 higher.

CUT NAILS, CHAIN, PILING

Cut nails, c.l., f.o.b. mills	2.45c to 2.55c
Cut nails, l.c.l., f.o.b. mills	2.55c to 2.65c
Sheet piling, base, Pittsburgh	2.00c to 2.10c

Chain proof BB and BBB, Pitts.

3/16-in. to ½-in.	33 1/3 and 5 off
9/16-in. to 1½-in.	33 1/3 off

CAST IRON WATED PIPE

Class B Pipe—Per Net Ton

Six-inch and over, Birmingh'm	$37.00 to 38.00
Four-inch, Birmingham	41.00 to 42.00
Four-inch, Chicago	47.20 to 49.20
Six-inch to 24-inch, Chicago	43.20 to 45.20
Six-inch and over, New York	38.50 to 40.50
Four-inch, New York	41.50 to 42.50
Standard fittings, Bir. base	$100.00

Six to 24-inch, base; over 24-inch plus $20; 4-inch, plus $10; 3-inch, plus $20; gas pipe fittings, $5 higher.

Class A pipe is $4 higher than Class B.

TIN PLATE; TERNE PLATE

Prices per 100-pound box Pittsburgh

*Tin plate, coke base	$5.25

Gary, Ind., base 10 cents higher.

Long ternes, primes, No. 24 .... 3.65c to 3.75c

*Price subject to quantity differentials.

WASHERS

Wrought, c.l., Pitts., dist.	$6.50 to 6.75 off
Wrought, l.c.l., Chicago dist.	$6.50 to 6.75 off
Wrought, c.l., Chicago	$6.70 to 6.80 off

RAILS, TRACK MATERIAL

Standard bessemer rails, mill	$43.00
Standard open-h'th rails, mill	$43.00
Relay rails, Pitts., 60 to 90 lb.	$25.00 to 29.00
Light rails, 25 to 45, mills	$36.00
Angle bars, Chicago base	2.75c
Spikes, railroad, mills	2.80c
Spikes, small railroad, 7/16-inch and smaller, Pitts.	2.80c
Spikes, boat and barge, Pitts.	3.00c
Spikes, railroad, Chicago	2.80c
Track bolts, Pitts., steam roads	3.80c
Track bolts, Pitts., stand. jobbers	73 off list
Track bolts, Chicago	3.80c
Tie plates, mills	$41.50

BOLTS AND NUTS

Pittsburgh, Cleveland, Birmingham and Chicago

Discounts are for legitimate jobbing or large consuming trade purchasing in full-case lists, apply to lists of May 10, 1930.

CARRIAGE BOLTS

All sizes, cut thread ..... 73 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Eagle list ..... 73 off

MACHINE BOLTS

All sizes, cut thread ..... 73 off

Rolled thread ⅜ x 6 and smaller take 10 per cent lower list.

Lag screws ..... 73 off

Plow bolts, Nos. 1-2-3-7 heads ..... 73 off

Tap bolts ..... 73 off

Blank bolts ..... 73 off

Stud bolts without nuts ..... 73 off

Stove bolts, 80, 10, 10 and 5 off in pkgs.; 80, 10, 10, 5 and 2½ off in bulk.

Tire bolts ..... 60, 10 and 10 off

NUTS

Semifinished ..... 73 off

***HEXAGON CAP SCREWS**

Milled ..... 80-10-5 off

Upset 1 in. diam. and smaller ..... 85-10 off

***SQUARE HEAD SET SCREWS**

Milled ..... 80-5 off

Upset 1 in. diam. and smaller ..... 80-10-5 off

*Discounts dated Jan. 23, 1930.

RIVETS

Struc. c.l., Pitts.-Cleve.	2.90c
Structural, c.l., Chicago	3.00c

**7/16-inch and smaller, Pitts. .. 70, 10 and 5 off

Chi., Cleve. ..... 70 to 70, 10 and 5 off

**Some makers quoting 70 off with freight allowed on 300 pounds or more.

Raw Materials and Semifinished Products

SEMIFINISHED STEEL

Prices Per Gross Ton

BILLETS AND BLOOMS

4 x 4-inch base

Pittsburgh, open-hearth	$31.00
Pittsburgh, bessemer	31.00
Youngstown	31.00
Cleveland	31.00
Philadelphia	37.30
Chicago	32.00
Forging, Chicago	37.00
Forging, Pittsburgh	37.00
Forging, Philadelphia	42.30 to 43.30

SHEET BARS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00
Chicago	32.00

SLABS

Pittsburgh	$31.00
Youngstown	31.00
Cleveland	31.00

WIRE RODS

Pittsburgh, Cleveland	$36.00
Chicago	37.00

SKELP

All grades, Pittsburgh	1.70c to 1.75c

IRON ORE

LAKE SUPERIOR ORE

Per Gross Ton, Lower Lake Ports

Old range bessemer, 51½%	$4.80
Mesabi bessemer, 51½%	4.65
Old range nonbessemer, 51½%	4.65
Mesabi nonbessemer, 51½%	4.50
High phosphorus, 51½%	4.40

EASTERN LOCAL ORES

Cents per unit delivered at Eastern Pennsylvania and New Jersey furnaces

Foundry and basic, 56-63% (contract)	10.00
Copper-free low phos. 53-65%	nominal

FOREIGN ORE

Cents per units, alongside docks Atlantic ports

Foreign manganiferous ore, 45-55%, iron, 6-10% manganese	10.50 to 11.00
North African low phosphorus	11.00
Swedish basic, 65%	9.50 to 10.50
Swedish low phosphorus	11.00
Spanish and North African basic, 50 to 60%	9.50 to 10.25
Newfoundland foundry, 55%	9.00
Tungsten, spot and future, short ton unit, duty paid	13.50 to 14.00
Chrome ore, 48%, net ton c.i.f.	$21.50 to 22.50

MANGANESE ORE

Prices, not including duty, are cents per unit; cargo lots.

Caucasian (52-55 per cent)	30 cents
Indian (48-50 per cent)	30 cents
Brazilian (46-48 per cent)	28 cents

FLUORSPAR

85 and 5 per cent grade

Washed gravel, Kentucky and Illinois mines, per net ton	$18.00
Washed gravel, import duty paid east, tide., gross ton	$19.50 to 20.50

REFRACTORIES

FIRE CLAY BRICK

Per 1000 f.o.b. works

First Quality

Pennsylvania	$43.00
Ohio	43.00
Illinois	43.00
Kentucky	43.00
Missouri	43.00
Maryland	43.00
Georgia and Alabama	40.00 to 47.00

Second Quality

Pennsylvania	35.00 to 38.00
Ohio	35.00 to 38.00
Illinois	35.00 to 38.00
Kentucky	35.00 to 38.00
Missouri	35.00 to 38.00
Maryland	35.00 to 38.00
Georgia and Alabama	30.00 to 35.00

SILICA BRICK

Pennsylvania	43.00
Joliet, Ill., East Chicago, Ind.	52.00
Birmingham	50.00 to 51.00

MAGNESITE BRICK

Per Net Ton

9 x 4½ x 2½	65.00

MAGNESITE

Net Ton Chester, Pa., and Baltimore base

Dead-burned grain magnesite	$40.00
Domes, Chewelah, Wash., base	22.00

CHROME BRICK

Net Ton Chester, Pa., and Baltimore base

9 x 4½ x 2½	$45.00

Pig Iron

Prices Again Reduced in Chicago District—Boat and Southern Iron in Sharp Competition—Market Is Easier

LAKE ERIE and Alabama furnaces are "fighting it out" in the Chicago district, with local furnaces trailing behind on the movement of prices. Middle interests have dropped the price of boat iron another 50 cents to $17.50, to $18, with about 12,000 tons on dock, approximately half the amount shipped in from eastern lake furnaces so far this season. Not to be outdone, southern furnaces now are reported offering at $12, base, to compete with this boat iron and undersell local furnaces. The northern price has eased off another 50 cents to $18.50. Silvery iron prices also have been marked down again in the Chicago territory. No further response to the Chicago situation is noted in the Lake Erie furnace prices. Elsewhere the market shows evidence of softening.

PITTSBURGH, June 10.—New orders and shipments of pig iron continue to taper slowly, with general activity at low ebb for the year to date. Buying practice is unchanged, melters taking only small lots. Inquiry is almost wholly lacking. Quotations are unchanged. Buyers are seeking lower levels but the meager volume of business lends producers no incentive to reduce prices. It is believed only large inquiry would result in a price adjustment comparable to that in other districts.

Boston, June 10.—The melt of pig iron in this district is at a low ebb and some foundries are deferring contract deliveries. General Electric Co. is inquiring for 1100 tons for its plants at Pittsfield and Lynn, Mass., and this is expected to test some of the new low prices. Sales in this district during the week amounted to slightly less than 2000 tons.

New York, June 10.—Encouraging to pig iron sellers is the unusually high percentage of business for prompt delivery, indicating consumers' stocks are low. Orders during the week totaled 5000 to 6000 tons. The largest was 1800 tons. Current buying has included some southern iron and also some iron for delivery over the second half. Prices are unchanged at $16 to $16.50, furnace, on Buffalo iron, and $18 to $18.50, delivered New York docks, on southern iron. Inquiry is estimated at 5500 tons, including 150 tons for the Schenetcady, N. Y., plant of the American Locomotive Co., and 1250 to 1350 tons for the General Electric Co. Of the latter 750 tons are for Lynn, Mass., 300 to 400 tons for Pittsfield, Mass., and 200 tons for Schenectady, N. Y.

Buffalo, June 10.—Orders for pig iron are limited to a few carloads. Shipments have dropped considerably from the April and May rates and considerable iron is being piled. An eastern melter is in the market for 1000 tons of foundry iron. Prices are unchanged.

Cleveland, June 10.—Business in pig iron has slowed up after brief activity. Combined sales of furnace interests with headquarters here and in Detroit dropped to 8300 tons the past week, from 13,500 tons the week preceding. Inquiries for third quarter are lighter. A Dayton, O., melter that inquired here for 1000 tons of foundry closed with a producer nearer its plant. Shipments in general are at a rate slightly reduced from late May. Only 3000 tons of pig iron has been shipped from Cleveland to Chicago so far this year. Producers point out that Lake Erie furnace prices would be lower today if the iron had not been shipped to Chicago. Cleveland furnaces hold to $18.50, base, for local delivery, and $18 for rail shipment to outside competitive points. Prices in northern Indiana and lower Michigan continue $18 to $19, base, furnace. The Bourne-Fuller stack of Republic Steel Corp. has been blown out for relining.

Chicago, June 10.—Quotations on pig iron are irregular due to offerings of eastern iron at docks here where about 12,000 tons is available. Chicago furnace iron is quoted nominally at $18.50 to $19, the former prevailing on the bulk of tonnage. Boat iron is quoted $17.50 to $18 for No. 2 foundry. Southern iron is reported offered at $12, base, Birmingham. Third quarter buying of northern iron is expected to be of a short range character, although inquiries for half a dozen tonnages now are pending. A cargo of silvery iron is being received in this market. A sale of about 500 tons of silvery iron north of here brought out lower prices. A cargo of silvery for shipment to western Michigan has just been loaded at the docks here.

Cincinnati, June 10.—Pig iron sales the past week were slightly under 3000 tons, including 700 tons to a Dayton, O., melter. Consumers are buying in small lots without open market inquiry. A central Ohio melter is inquiring for 400 tons of southern iron. Prices are unchanged.

St. Louis, June 10.—Some improvement, mainly in inquiries, has developed in the pig iron market. Sales during the past week amounted to 3000 tons, including 1000 tons booked by the leading producer here for a manufacturer of heating apparatus. Considerable activity is noted among companies making large valves and other equipment for pipe lines. Shipments are holding up fairly well. Tonnage engaged thus far for third quarter is the smallest of any comparable period in five years. Prices are steady, with current quotations applying for third quarter.

Birmingham, Ala., June 10.—Demand for pig iron has subsided, but shipments continue slightly larger than production. Sales and inquiries are

(*Concluded on Page 99*)

Pig Iron Prices

Per Gross Ton

Bessemer, valley furnace	$19.00
Bessemer, del. Pittsburgh	20.76
Basic, valley furnace	18.50
Basic, Pitts. dist. fur.	19.00
*Basic, del. Pitts.	19.63 to 20.13
Basic, del., eastern Pa.	18.50 to 19.00
Basic, Buff. fur. for local del.	18.00
Malleable, valley furnace	19.00
Malleable, Pitts. dist. fur.	19.50
*Malleable, del. Pittsburgh	20.13 to 20.63
Malleable, Cleve. fur. for local del.	18.50
Malleable, Chicago furnace	18.50
Malleable, Chicago, lake dock	17.50 to 18.00
Malleable, Buff. fur. for local del.	19.00
Malleable, del. eastern Pa.	19.76 to 21.41
Malleable, Granite City fur.	19.00
No. 1 foundry, Chicago furnace	19.00
No. 1X, Eastern del. Phila.	20.76 to 21.26
No. 1X, Buff., fur. for local del.	20.00
No. 2 foundry, valley furnace	18.50
No. 2 fdy., Pitts. dist. fur.	19.00
*No. 2 foundry, del. Pittsburgh	19.63 to 20.13
No. 2 plain, Buff. fur. for local del.	18.50
No. 2 foundry, Chicago furnace	18.50
No. 2 foundry, Chicago, lake dock	17.50 to 18.00
No. 2 fdy., Cleve. fur. for local del.	18.50
No. 2 fdy., Granite City	19.00
No. 2 plain, del. Phila.	19.76 to 20.26
No. 2 plain, Virginia furnace	17.75
No. 2 plain, Buffalo, del. Boston	21.41 to 21.91
No. 2, Brooklyn, Buffalo all rail.	20.91 to 21.41
No. 2, Newark, Buffalo, all rail.	19.28 to 19.78
No. 2 Ala., Bir. base, local del.	14.00
No. 2 Tenn., Bir. base, local del.	14.00
No. 2 Tenn., del. Cincinnati	16.69 to 18.19
No. 2 Alabama del. Cincinnati	16.69 to 18.19
No. 2, Alabama, del. Cleveland	19.01 to 19.51
No. 2 Alabama, del. Chicago	18.51
No. 2 Alabama, del., St. Louis	17.42
No. 2 Ala., Phila., dock dely.	17.25 to 18.25
No. 2 Ala., Balt., dock dely.	17.00 to 18.00
No. 2 Ala., N. Y., dock dely.	18.00 to 18.50
No. 2 Ala., Boston, dock dely.	20.21
No. 2X, Brooklyn, Buffalo all rail.	21.41 to 21.91
No. 2X, Newark, Buffalo all rail.	19.78 to 20.28
No. 2X, eastern, del. Phila.	20.26 to 20.76
No. 2X, Buffalo, fur. for loc. del.	19.00
No. 2X, Buffalo, del. Boston	21.91 to 22.41
No. 2X, Virginia furnace	18.25
Gray forge, Pitts. dist. fur.	18.50
*Gray forge, del. Pittsburgh	19.13 to 19.63
Low phos., standard, valley	27.00
Low phos., standard, Phila.	24.76
Low phos., copper bearing fur.	23.00 to 23.50
Charcoal, Superior, del., Chicago	23.04 to 27.04

*Freight from Pittsburgh district furnace to points in Pittsburgh district 63.00c, 76.00c and $1.13 per ton.

Silvery iron, Jackson county, O., furnace in per cents: 5—$21.50; 6—$21.50; 7—$22.00; 8—$22.50; 9—$23; 10—$23.50; 11—$24.50; 12—$25.50; 13—$26.50.

Bessemer ferrosilicon, Jackson county, O., furnaces, in per cents: 10—$30; 11—$32; 12—$34; 13—$36; 14—$38; 15—$41; 16—$43.50; 17—$46.50.

CANADIAN PRICES

No. 1 foundry, del. Toronto	$22.60
No. 1 foundry, del. Montreal	24.00
No. 2 foundry, del. Toronto	22.10
No. 2 foundry, del. Montreal	23.50
Malleable, del. Toronto	22.60
Malleable, del. Montreal	24.00
Basic, del. Montreal	22.50

Coke

Prices Steadied in Dull Market by Reduced Rate of Output—New Furnace Fuel Orders Are Low

PRODUCTION of coke is held down to the level of requirements, tending to steady the market. The weekly output in the Connellsville district now is approximately 30,000 tons, compared with slightly more than 108,000 tons a year ago. Furnaces are buying carloads only, while foundries are taking less than last month. Some melters have covered for by-product fuel for second half.

Pittsburgh, June 10.—Low production of beehive coke is restricting the accumulation of surplus fuel and providing a fairly steady market. Demand remains dull in all grades, with buying of furnace fuel limited mainly to single carloads. The price continues $2.50. Foundry coke is quiet and less active than a month ago, while foundry operations are off similarly. Foundry coke prices are unchanged at $3.50 to $4.85.

Production of coke in the Connellsville region for the week ended May 31 was 29,960 tons compared with 28,700 tons the preceding week and 108,390 tons in the same period a year ago, according to the *Connellsville Courier*.

Boston, June 10.—New England foundries have contracted for last half requirements since coke companies opened books June 1. The volume of business placed and in prospect indicates little change from the first half.

New York, June 10.—Sellers of certain premium brands of foundry coke have reaffirmed $4.85, Latrobe, Pa., on second half business. Standard grades of beehive foundry coke remain $3.50 to $3.75, Connellsville. Beehive furnace coke is easier at $2.50 to $2.60, Connellsville, with demand generally slack. By-product coke is $9.40, delivered Newark; $11, New England; and $9, Philadelphia.

Cincinnati, June 10.—Demand for by-product foundry coke continues dull. Bookings for domestic grades, on which prices were increased June 1, are below May rate.

St. Louis, June 10.—New orders for metallurgical coke are below the seasonal average. Shipments in May were smaller than in April. Stove foundries, jobbing foundries and makers of heating apparatus are the most active. Prices are steady.

Chicago, June 10. — By-product foundry coke shipments are down 15 to 20 per cent from the April rate. Prices are unchanged at $8, ovens, and $8.75, for local delivery.

Birmingham, Ala., June 10.—Coke consumption in this district is steady and shipments continue to be made to outside points, with production below capacity. By-product foundry coke is held at $5, base, Birmingham.

Coke Prices

Prices Per Net Ton

Beehive Ovens	
Connellsville furnace	$2.50
Connellsville foundry	3.50 to 4.85
New River foundry	6.00
Wise county foundry	4.25 to 5.00
Wise county furnace	3.50 to 4.25
By-Product Foundry	
Newark, N. J., del.	$9.00 to 9.40
Chicago ovens	8.00
New England, del.	11.00
St. Louis, del.	9.00
Birmingham, ovens	5.00
Indianapolis, del.	8.25
Ashland, Ky., ov., Connell. basis	6.50
Portsmouth, O., ov., Connell. basis	6.50
Buffalo ovens	8.75
Detroit ovens	8.50
Philadelphia, del.	9.00

Ferroalloys

Shipments Slower Than Last Month—Prices Steady

New York, June 10.—Reflecting the trend in steel operations, shipments of ferromanganese are slightly easier. Prices are unchanged at $99, duty paid, to users of carloads to 500 tons annually. Domestic spiegeleisen, 19 to 21 per cent, also is steady at $34, furnace, in carload lots.

Pittsburgh, June 10.—Shipments of most grades of ferroalloys show a further tapering and are slightly below the volume a month ago. The market remains dull in spot buying and quotations continue steady at $103.79, delivered, for ferromanganese and $34 for spiegeleisen. Quantity differentials apply on large tonnages. Ferrosilicon and ferrochrome are slightly less active than a month ago, while ferrotungsten also continues dull. Prices are unchanged.

Bolts, Nuts, Rivets

Third Quarter Contracts Offered at Current Prices

NUT AND BOLT PRICES, PAGE 84

Pittsburgh, June 10.—Specifications for bolts, nuts and rivets are fairly steady but smaller than during early May. Operations are lower at 55 to 60 per cent. Third quarter contracts are being offered at current prices of 73 off for bolts and nuts and 2.90c for large rivets.

Chicago, June 10.—Third quarter contracting for bolts and rivets is under way with normal commitments. Recent reduced prices are being accepted generally. Shipping orders are light. Prices are unchanged at 64 to 73 off for bolts and nuts, and 3.00c, Chicago, for large structural rivets.

Cleveland, June 10.—Orders for nuts, bolts and rivets warrant only a 50 per cent operating schedule. Orders are small in almost every case. Business in May was 25 to 30 per cent lower than May a year ago and June is not developing improvement.

Decline in Locomotives

Washington, June 10.—Reversing the upward trend of the first four months of 1930, May total shipments of railroad locomotives slumped to 58 units, the decline being largely in domestic shipments. Unfilled orders at the end of the month were also off, forecasting a continued low for June. Five-month totals are higher in all classifications during 1930 than for the corresponding period of 1929. Department of commerce reports the following monthly comparisons:

	Domestic Shipments			Domestic Unfilled Orders		
1929	Total	Steam	Elec.	Total	Steam	Elec.
May	99	92	2	444	362	22
Total (5 mos.)	241	206	15	.....	.....	.....
June	78	58	1	552	489	21
July	69	39	3	539	490	18
August	129	117	6	436	392	13
September	75	60	7	429	347	55
October	96	90	6	423	347	49
November	95	75	....	398	340	49
December	67	62	1	490	435	48
Total	850	707	39	104	.....	.....
1930						
January	48	48	....	587	527	50
February	67	60	4	533	479	46
March	68	64	2	535	485	44
April	97	94	....	464	417	44
May	58	56	....	419	367	43
Total (5 mos.)	338	322	6	.....	.....	.....

The first gas tank ever built, a wrought-iron cylinder erected in 1808, is still standing at Smethwick, England.

Ferroalloy Prices

(In dollars, except Ferrochrome)

*Ferromanganese, 78 to 82 per cent tidewater, duty paid	$99.00
*Ferromanganese del. Pittsburgh	103.79
Spiegeleisen, 19 to 21 per cent, domestic furnace spot†	34.00
*Ferrosilicon, 50 per cent, freight allowed, carloads	83.50
*Do, less carload	88.50
Do, 75 per cent	13.00 to 15.00
Ferrochrome, 66-70 chromium, 4-6 carbon, cts. per lb., con., del.	11.00
Do, for spot delivery	11.50
Ferrotungsten, stand., lb. cont.	1.30 to 1.35
Ferrovanadium, 30-40 per cent, per lb., contained, on analysis	3.15 to 3.65
Ferro-carbon-titanium carload producers' plants, net ton	160.00
Do, one ton to carload	170.00
Ferrophosphorus, per ton, carload 17 to 19 per cent, Rockdale, Tenn., basis (18 per cent)	91 00
Ferrophosphorus, electrolytic, per ton carload, 23-25% f.o.b. Anniston, Ala. (24 per cent)	122.50

†Carloads. Differentials apply to large quantities.

*To users of carloads to 500 tons annually. Differentials apply to users of larger quantities.

Scrap

Lower Prices Come Out in Many Grades—Melters Seek Only Immediate Needs—Tonnages Scarce

BOTTOM in iron and steel scrap prices apparently is not easily reached in the present movement and further declines have been made. Melters are interested only in current supplies and are resisting present levels. Dealers are doing little trading with each other. Delivery restrictions in East continue in force.

Chicago, June 10.—Sharp pressure against iron and steel scrap prices is being exerted by melters who are interested only in current needs. Heavy melting steel is down 25 cents to $12 to $12.50. The recent stronger tone in the Pittsburgh district has found no direct reflection here. Reduction in melting steel followed a sale to the large Gary consumer on a basis figuring at $12.50, delivered in the Chicago switching district. Some plate scrap is being released as a result of offerings by car shops and recent accumulations from structural steel fabricators. Dealer trading is quiet. Consumer quotations for No. 1 busheling and rerolling rails are 25 to 50 cents lower. Cast grades are a drug on the market. It is evident that merchant blast furnaces are not forcing production, as consumption of cast borings is light.

New York, June 10.—Reductions in shafting, specification pipe and rails for rolling constitute the only changes in scrap. Trading continues inactive. Deliveries are being held up on yard steel for Pottsville, Pa.; railroad steel for Claymont, Del.; and yard steel and blast furnace scrap for Conshohocken,

Iron and Steel Scrap Prices

Corrected to Tuesday noon. Gross tons delivered to consumers, except where otherwise stated.

Steel Works Scrap

HEAVY MELTING STEEL

Birmingham	10.50 to 12.00
Boston, dealers	8.50 to 9.00
Buffalo, No. 1	13.25 to 14.00
Buffalo, No. 2	11.25 to 11.75
Chicago	12.00 to 12.50
Cincinnati, deal.	11.00 to 11.50
Cleveland, No. 1	12.25 to 13.00
Cleveland, No. 2	11.75 to 12.25
Detroit, No. 1 deal	11.00 to 11.50
Detroit, No. 2 deal.	9.50 to 10.00
East Pa., del. mill	13.00 to 13.50
N. Y. deal R. R.	9.00 to 9.50
N. Y. deal No. 2	7.00 to 7.50
N. Y., deal. yd.	6.25 to 6.75
Pittsburgh No. 1	15.00 to 15.50
St. Louis, No. 1 sel.	11.75 to 12.00
Federal, Ill.	11.00 to 11.50
Granite City, Ill.	10.50 to 11.00
Valleys, No. 1	15.50 to 16.00

COMPRESSED SHEETS

Buffalo (dealers)	11.25 to 11.75
Chicago	10.75 to 11.25
Cleveland	12.00 to 12.50
Detroit, dealers	10.50 to 11.00
E. Pa. new mat.	12.00 to 12.50
Pittsburgh	14.75 to 15.25
Valleys	15.00

BUNDLED SHEETS

Buffalo	9.00 to 9.50
Cincinnati, deal.	10.25 to 10.75
Cleveland	9.50 to 10.00
Eastern Pa.	10.00
Pittsburgh	12.50 to 13.00
St. Louis	6.50 to 7.00

SHEET CLIPPINGS LOOSE

Chicago	7.50 to 8.00
Cincinnati	8.00 to 8.50
Detroit, dealers	8.00 to 8.50
St. Louis	6.50 to 7.00

STEEL RAILS SHORT

Birmingham	11.00 to 12.00
Boston, dealers	7.00 to 8.75
Buffalo	16.25 to 16.75
Chicago (3 ft.)	14.25 to 14.75
Chicago (2 ft.)	15.00 to 15.50
Cincinnati, deal.	17.00 to 17.50
Detroit, dealers	15.00 to 15.50
Pittsburgh, (open-hearth, 3 ft. and less)	17.50 to 18.00
St. Louis	16.00 to 16.50

STOVE PLATE

Birmingham	10.00 to 11.00
Boston, consumers	10.00 to 10.50
Buffalo	11.00 to 11.50
Chicago, net	9.50 to 10.00
Cinn., deal. net	8.25 to 8.75
Detroit, net, deal.	9.00 to 9.50
Eastern Pa.	10.50
N. Y., deal., mill	6.25 to 6.50
St. Louis	9.75 to 10.25

COUPLERS, SPRINGS

Buffalo	16.25 to 16.75
Chicago	14.00 to 14.50
Eastern Pa.	18.50
Pittsburgh	17.50 to 18.00
St. Louis	12.50 to 13.00

ANGLE BARS—STEEL

Chicago	13.00 to 13.50
St. Louis	11.25 to 11.75

LOW PHOSPHORUS

Buffalo, billets and bloom crops	17.50 to 18.00
Cleve. billet and bloom crops	17.50
Eastern Pa.	19.50 to 20.00
Pitts. billet and bloom crops	20.00 to 21.00
Pitts. Sheet bar crops	19.00 to 19.50

FROGS, SWITCHES, GUARDS

Chicago	13.25 to 13.75
St. Louis	12.00 to 12.50

SHOVELING STEEL

Chicago	12.00 to 12.50
Cleveland	9.75 to 10.25
St. Louis	10.50 to 11.00

Iron Mill Scrap

RAILROAD WROUGHT

Birmingham	10.00 to 10.50
Boston, dealers	8.50 to 9.00
Buffalo, No. 1	10.00 to 10.50
Buffalo, No. 2	13.75 to 14.25
Chicago,, No. 1	11.75 to 12.35
Chicago, No. 2	12.00 to 12.50
Cincinnati, No. 2	11.00 to 11.50
Eastern Pa.	15.00 to 15.50
N. Y., No. 1 deal.	11.75 to 12.00
Pittsburgh, No. 2	15.00 to 15.50
St. Louis, No. 1	10.00 to 10.50
St. Louis, No. 2	11.00 to 11.50

SPECIFICATION PIPE

Boston	8.00 to 8.50
Eastern Pa.	12.50
New York, deal.	7.75 to 8.25

BUSHELING

Buffalo, No. 1	11.50 to 13.00
Chicago, No. 1	10.00 to 10.50
Cinn., No. 1 deal.	9.25 to 9.75
Cinn., No. 2	6.25 to 6.75
Cleveland, No. 2	8.50 to 9.00
Detroit, No. 1 new deal.	9.75 to 10.25
St. Louis, No. 1	9.50 to 10.00
Valleys, new No. 1	15.00

MACHINE SHOP TURNINGS

Birmingham	7.00 to 8.00
Boston, dealers	4.00 to 4.50
Buffalo	8.75 to 9.25
Chicago	7.00 to 7.50
Cincinnati, deal.	7.50 to 8.00
Cleveland	8.00 to 8.50
Detroit	6.25 to 6.75
Eastern Pa.	9.50
New York, deal.	6.00
Pittsburgh	9.50 to 10.00
St. Louis	6.75 to 7.25
Valleys	11.25 to 11.75

MIXED BORINGS, TURNINGS

For blast furnace use

Boston, dealers	4.00 to 4.25
Buffalo	9.75 to 10.25
Cincinnati, deal.	8.00 to 8.50
Cleveland	9.25 to 9.50
Detroit, dealers	7.50 to 7.75
Eastern Pa.	8.50 to 9.00
New York, deal.	5.00
Pittsburgh	10.00 to 10.50

CAST IRON BORINGS

Birmingham, chem.	12.00 to 13.00
Birmingham, plain	7.00 to 8.00
Boston, chem.	9.00 to 9.25
Boston, dealers	4.10 to 4.60
Buffalo	9.75 to 10.25
Chicago	8.00 to 8.50
Cincinnati, deal.	8.00 to 8.50
Cleveland	9.25 to 9.50
Detroit, dealers	7.50 to 7.75
Eastern Pa.	10.00
Eastern Pa, chem.	14.00
New York, deal.	6.50
Pittsburgh	10.00 to 10.50
St. Louis	9.25 to 9.50

PIPE AND FLUES

Cincinnati, deal.	9.00 to 9.50

RAILROAD GRATE BARS

Buffalo	9.50 to 10.00
Chicago, net	8.50 to 9.00
Cincinnati	9.00 to 9.50
Eastern Pa.	11.00
New York, deal.	7.75
St. Louis	10.25 to 10.50

FORGE FLASHINGS

Boston, dealers	7.00 to 7.50
Buffalo	11.25 to 11.75
Cleve. over 10 in.	10.50 to 11.00
Detroit	9.75 to 10.25

FORGE SCRAP

Boston, dealers	7.00 to 7.50
Chicago	15.00 to 15.50
Eastern Pa.	12.50 to 13.00

ARCH BARS AND TRANSOMS

Chicago, net	14.75 to 15.25
St. Louis	15.00 to 15.50

Iron, Steel Works Scrap

AXLE TURNINGS

Boston, deal.	6.75 to 7.00
Buffalo	12.00 to 12.50
Chicago steelworks	9.50 to 10.00
Cleveland	12.00 to 12.25
Eastern Pa.	12.00
Pittsburgh	13.00 to 13.50
St. Louis	9.25 to 9.75

STEEL CAR AXLES

Birmingham	14.00 to 15.00
Boston, ship point	15.50 to 16.00
Buffalo	16.00 to 16.50
Chicago	17.00 to 17.65
Eastern Pa.	22.00
St. Louis	16.50 to 17.00

SHAFTING

Boston, ship point	12.50 to 13.00
Chicago	16.25 to 16.80
Eastern Pa.	18.00 to 18.25
New York, deal.	13.00 to 14.00
St. Louis	17.00 to 17.50

Iron Foundry Scrap

CAR WHEELS

Birmingham, iron	10.00 to 11.00
Boston, iron	14.00 to 14.50
Buffalo, iron	13.25 to 13.75
Buffalo, steel	16.25 to 16.75
Chicago, iron	13.50 to 14.00
Chi., rolled steel	15.50 to 16.00
Cincinnati	12.00 to 12.50
N. Y., iron, deal.	10.50 to 11.00
Pittsburgh, iron	15.50 to 16.00
Pittsburgh, steel	17.50 to 18.00
St. Louis, iron	12.50 to 13.00
St. Louis, steel	14.00 to 14.50
East Pa. steel	18.50 to 19.00
East Pa. iron	15.00

NO. 1 CAST SCRAP

Birmingham, cup.	10.00 to 11.00
Buffalo	12.00 to 12.50
Boston, textile	11.50 to 12.50
Chicago, mach.	14.55 to 15.10
Chicago, railroad	11.75 to 12.35
Chicago, agri.	11.20 to 11.75
Cincinnati, mach. cupolas, gross	17.75 to 18.25
Cleveland, cupola	14.00 to 14.50
Detroit, net deal.	10.00 to 10.50
East Pa. cupola	14.50 to 15.00
N. Y. cup. deal.	10.25
N. Y., del. local foundries	15.00
Pittsburgh, cupola	14.00 to 14.50
San Fran., del.	13.50 to 14.00
Seattle	14.00 to 14.25
St. L. No. 1 mach.	12.50 to 13.00
St. Louis, No. 1	11.50 to 12.00

HEAVY CAST

Boston	10.50 to 11.00
Boston, mach. cast	14.00 to 14.50
Buffalo, breakable	8.50 to 9.00
Cleve., breakable	9.00 to 9.50
Detroit, auto, net Dealers	11.50 to 12.00
Det., break., deal.	7.00 to 7.50
Eastern Pa.	12.50 to 13.00
N. Y. No. 1 deal.	9.25 to 9.50
N. Y. break. deal	8.00 to 9.00
Pittsburgh	11.50 to 12.00

MALLEABLE

Boston, railroad	15.00 to 15.50
Buffalo	15.50 to 16.00
Chicago, agri.	13.00 to 13.50
Chicago, railroad	15.25 to 15.75
Cinn., R. R. deal.	15.25 to 15.75
Cinn., agri., deal.	14.25 to 14.75
Cleveland, rail	16.00 to 16.50
Detroit, auto deal.	13.50 to 14.00
St. Louis, rail	13.00 to 13.50

Miscellaneous Scrap

RAILS FOR ROLLING

5 feet and over

Birmingham	12.00 to 13.00
Boston	9.00 to 9.50
Buffalo	13.50 to 14.00
Chicago	14.50 to 15.00
Eastern Pa.	15.00 to 15.50
New York	10.00 to 10.50
St. Louis	12.50 to 13.00

LOCOMOTIVE TIRES

Chicago, cut	15.50 to 16.00
St. Louis No. 1	13.00 to 13.50

LOW PHOS. PUNCHINGS

Chicago	13.50 to 14.00
Pittsburgh	17.50 to 18.00
Eastern Pa.	18.00 to 19.00
Buffalo	17.00 to 17.50

Pa. Bethlehem Steel Co., noted recently as suspending shipments on mixed borings and turnings for Coatesville, is understood to have blown out the furnace at that point. This company has lifted its ban on unprepared scrap for Bethlehem, Pa.

Boston, June 10.—While heavy melting steel is firmer, the general situation remains unsettled. Rails have displayed a slightly firmer trend. There is an utter lack of business, however. An Italian steamer will load a fair tonnage later in the month for Japan.

Philadelphia, June 10.—Considerable business has been done in heavy melting steel. This grade continues at $13 to $13.50 with the average about $13.25.

Buffalo, June 10.—Scrap yard operations are at the lowest tpoint in years for this season of the year. Lack of demand and restriction of deliveries is responsible. Large railroad offerings of scrap resulted in Buffalo getting only a small tonnage of iron car wheels, at about $13.50. Specialties are lifeless and somewhat lower in nominal quotations.

Pittsburgh, June 10.—Scrap is quiet with most prices prices steady but nominal. Heavy melting steel on the Pennsylvania railroad list brought $15.30 to $15.60 and with offerings limited this grade is unchanged at $15 to $15.50, although new mill buying is lacking. Compressed sheets are up 25 cents on a sale at $15.25. Railroad steel specialties are lower, with blast furnace material dull.

Cleveland, June 10.—Iron and steel scrap continues quiet with most prices nominal. A small sale of No. 1 heavy melting steel is reported to have been made at about $12.50. Prices are unchanged with the exception of a 50-cent decline in machine shop turnings to $8 to $8.50 and 25 cents in cast iron borings and short turnings, now quoted $9.25 to $9.50.

Detroit, June 10.—Only absence of heavy supplies of scrap in this market has caused a much greater drop in prices. No change has taken place, though some grades are nominally lower in the absence of demand.

Cincinnati, June 10.—Quotations on iron and steel scrap are unchanged. Although no increase in demand was noted, some improved sentiment is reported. The Louisville & Nashville railroad list of 12,000 tons, including 6000 tons of rails, will close this week.

St. Louis, June 10.—Iron and steel scrap continues dull and weak. Virtually all important items, including heavy melting steel and rails, are at the low point of the present downward movement, and the lowest in recent years. Demand is on a hand-to-mouth basis, purchasing of real tonnage being entirely absent. Neither melters nor dealers seem disposed to invest, despite the evident bargains.

Birmingham, Ala., June 10.—Only steel scrap is moving, and not much of that. The market is slow and prices are nominal. Heavy melting steel still finds a little demand, the best quality now to be had at $12 per ton and less while the general run is being bought at $10.75, delivered in home territory.

Toronto, Ont., June 10.—While some betterment in iron and steel scrap sales is shown, no large tonnage business has been booked. Mills placed some small orders for steel scrap, but most buying came from foundry interests. In the Montreal market some improvement is reported in both iron and steel grades, but all business is for spot delivery. Prices are unchanged.

Canadian Scrap

Dealers' Buying Prices

MONTREAL

Per Gross Ton

Iron axles	$19.00
Steel axles	17.00
Car wheels	14.50
Stove plate	12.00
Wrought pipe	6.00
Turnings	6.50
Heavy melting steel	8.00

TORONTO

Steel axles	14.00
Iron axles	16.00
Heavy melting steel	9.00
Turnings	7.00
No. 1 mach. cast (net)	15.00
Malleable (net)	11.50

Semifinished Steel

Sheet Bars, Billets and Slabs Now Generally $31

SEMIFINISHED STEEL PRICES, PAGE 84

Youngstown, O., June 10.—Paralleling once more the steady decline in independent sheet mill operating rates in this district, makers of sheet bars, billets and slabs have followed an important northern Ohio mill in quoting these products at $31, Pittsburgh and Youngstown. This is a reduction of $1 a ton from the former prevailing price of $32. The market is quiet, sales being confined mainly to sheet bars and slabs.

Philadelphia, June 10.—Billet prices have declined here corresponding to the tendency in the market farther west. Rerollers now are $32, base, Pittsburgh, and forging quality $37 to $38. Wire rods are firm at $36, Pittsburgh.

Pittsburgh, June 10.—Producers defer opening third quarter books on semifinished steel pending a settlement of the price situation. Inquiry, however, has been light. Some makers continue to name $32 for rerolling billets, sheet bars and slabs, but $31 has not been withdrawn and continues a part of the current market quotation. Specifications and shipments are off from the May rate and new business is mainly in small lots. Forging billets continue $5 above the rerolling grade, with wire rods steady at $36.

Cleveland, June 10.—Price reductions in sheet bars, billets and slabs have failed to stimulate business for spot or third quarter delivery. A leading merchant producer here is billing contract shipments at $31, Cleveland or Youngstown. This adjustment was necessary following offer of $31, Youngstown, by other makers. This price is likely to be named on specific orders for third quarter, though books have not been opened. The Cleveland producer continues to operate eight of its 14 open hearths.

Chicago, June 10.—Activity in sheet bars leads in shipments of semifinished steel. Second quarter semifinished orders and shipments have exceeded those of first quarter. Orders for billets, blooms and slabs, which remain at $33 to $34, Chicago, are light. Sheet bars also are quoted at $33 to $34, base. Wire rods are unchanged at $37, Chicago.

Operating Rates

Chicago, Cleveland Again Off As Steelmaking Continues Decline

Pittsburgh—Ingot operations are little changed but the tendency continues downward with the current average 70 per cent. Sheet schedules are lower at 60, with tin plate continuing 75 to 80. Strip is unchanged at 65 to 75, with pipe holding at 75.

Cleveland—Ingot production continues its downward trend and for the third consecutive week a decline is to be noted with steelmaking standing at 65 per cent of capacity. Twenty-two of 34 open-hearth furnaces are in production, one local producers curtailing operations entirely. Corrigan McKinney Steel Co. has eight steelmaking furnaces pouring. American Steel & Wire Co. has six furnaces on.

Chicago—Ingot output has been reduced about five points to about 75 per cent. Bar and rail mills also are off, the former to 75 and the latter to about 70 per cent. Illinois Steel Co. has taken off No. 1 furnace at South Chicago for relining, this stack having been scheduled to go out more than a month ago. That interest also has banked a second Gary furnace in the last three weeks, leaving 15 of its 27 furnaces active. Of the district's 36 furnaces, 23 are blowing.

Buffalo—District operations are unchanged at 73 per cent of open-hearth capacity. Heavier mills are generally on double turn.

Birmingham, Ala.—A slump in production of ingots and in finishing mills' operations follows shutting down of several open-hearth furnaces of Tennessee Coal, Iron & Railroad Co. End of orders on books was announced. Ingot production is around 80 per cent and mill operations are under 70 per cent.

Youngstown, O.—Gradual recession of steelworks operations continues. With 28 independent open hearths active this week out of the district total of 53 units, this gives a rate of 55-60 per cent. Bessemer activity is around 60 per cent. Independent sheet mills are 44 per cent active, there being 52 units on out of a total of 120. Independent bar mills are at 55 and Carnegie Steel at 65 per cent, both unchanged. Strip mills are at 65, and both independent and Corporation tin plate mills are running at about 70.

Bars

Recession in Demand Is Steady—Summer Lull Is Making Itself Felt—Prices Are Steady

LESSENED tonnage of soft steel bars is coming to mills as summer slackness approaches. At Chicago inventory has cut down activity of agricultural implement and tractor makers. Prices are fairly steady in faee of small-lot buying but rail steel bars have declined $1 to 1.75c to 1.80c. Mills are ready to take third quarter tonnage at present quotations, but buyers delay.

BAR PRICES, PAGE 83

Chicago, June 10.—Bar mill operations are down to 75 per cent, due in part to the falling off in implement tonnage. Several implement interests are down entirely for June inventories, while July 1 inventory is scheduled for others. Several of the implement works are operating two to three days weekly, but larger tractor builders have fair programs. Several road machinery builders, on the other hand, are rushed to get out orders. Shipments of heavy finished steel to freight car shops will be largely completed this month. Bar specifications fail to hold their own with shipments. The usual run of specifications at the close of the month increased shipping orders, which was reflected in the week just closed. One producer reports the fourth largest week this year in specifications for all finished products, with a fair sales volume. Rail steel bar mills are operating above 80 per cent, largely on old orders. Little eastern competition is felt. One eastern producer is shipping two cargoes weekly by lake for deliveries into Chicago-Milwaukee territory. Mills are prepared to take third quarter tonnage at 1.85c, Chicago, for soft steel bars, and 1.80c for plates and shapes. Rail steel bars are down $1 a ton to 1.75c to 1.80c, Chicago Heights.

Philadelphia, June 10.—Steel bars reflect a slight increase in specifications, with June, so far, ahead of May. Prices are firm at 1.75c to 1.80c, base, Pittsburgh.

Pittsburgh, June 10.—Further moderation is noted in demand for steel bars. Requirements of the automotive industry are holding fairly well but demand from miscellaneous sources is off from the rate a month ago. Producers have not opened books for third quarter although inquiry has been light. The market remains steady at 1.75c, Pittsburgh.

Cleveland, June 10.—Soft steel bar business continues to decline, with the lack of automotive business felt keenly. Bolt, nut and rivet makers are taking fair amounts. Local mills ask 1.75c, base, Cleveland, for outside delivery and 1.80c for local delivery, which outside mills frequently meet.

Make Bar, Plate Inquiry

Philadelphia, June 10.—Seaboard Air Line railroad is inquiring for bar, plate and shape tonnages for third-quarter delivery, and it is reported also that the Chesapeake & Ohio railroad is inquiring for third quarter bars and plates.

National Steel Heads Visit Ore Holdings

Pittsburgh, June 10.—Officers and directors of the National Steel Corp. are inspecting the iron ore properties of its subsidiaries this week. The inspection trip started June 9 at the Richmond mine on the Marquette range and continues through June 14. Properties on the Menominee, Gogebic, Cuyuna and Mesabi ranges will be visited, the tour ending at Hibbing, Minn.

In the group visiting the mines are E. T. Weir, chairman; George R. Fink, president; F. M. Hesse, treasurer; and George M. Humphrey, chairman of the executive committee, of National Steel. Directors of the corporation making the trip are Howard M. Hanna, chairman of the M. A. Hanna Co., Cleveland; C. A. Collins, president of the Hanna Furnace Co., division of National Steel; J. C. Williams, president of the Weirton Steel Co.; E. W. Mudge, of E. W. Mudge & Co., Pittsburgh; Carlton M. Higbie of Keane, Higbie & Co., Detroit, and C. M. Thorp, of Thorp, Bostwick, Stewart & Read, Pittsburgh

Other members of the party include L. C. Hanna Jr., member of the executive committee of M. A. Hanna Co.; H. L. Pierce, secretary and C. N. Hickok, vice president of the Hanna mining companies; F. S. Bale, vice president of Bankers Trust Co., New York, and Albert Heekin, president of the Heekin Can Co., Cincinnati.

Plates

Chicago Mills Expect 200,000 Tons for Gas Line Pipe Work—Inquiry More Active in East

ACTIVITY in the plate market is most pronounced in the Chicago district. Gas line pipe work will require 200,000 tons in July and August. Mills are beginning to ship plates to the Milwaukee fabricators. New orders from refineries are small. Inquiry for fabricated plate work features the eastern market. Current prices are offered in some districts for third quarter.

PLATE PRICES, PAGE 83

Chicago, June 10.—Gas line pipe work which will be ready for plate shipments during July and August is expected to result in bookings of close to 200,000 tons for Chicago district plate mills. Some shipments now are being made by boat to Milwaukee pipe fabricators following rejection of pleas for lower rail rates from the Chicago district to several Wisconsin points. About 2000 tons for refinery tank work have been added to inquiry in several lots from the Southwest, while about 1000 tons of miscellaneous tank plates have been closed. Plate mills lead finishing mill operations at slightly above 85 per cent. The usual month-end specifications boosted shipping orders in the last week. Rolling cycles for some sizes run close to 30 days, while other miscellaneous sizes can be shipped fairly promptly. Plates are 1.80c, base, Chicago.

New York, June 10.—Plate mills note little change in miscellaneous buying, but inquiry for fabricated plate work has improved. One leading fabricator reports inquiry now is the best in over six months, although little of it has developed into orders. Prices on fabricated plate work continue irregular, but on plain material there is evidence of firmness at 1.80c to 1.85c, Coatesville, Pa. Bids were opened June 9 by the Roosevelt Lines on reconditioning five vessels, requiring an aggregate of 2500 tons. Award of 500 tons of pipe for the department of water supply, gas and electricity is expected soon.

Pittsburgh June 10.—Plates remain in a fairly steady market at 1.70c, Pittsburgh, despite occasional reports of 1.65c. Third quarter inquiry is lacking and producers have made no formal announcement for that period, although it is expected current prices will be continued. Business is declining slowly and is off moderately from the May volume. Demand remains light from several sources including barge and tank builders. Six barges requiring 1500 tons of plates and shapes for the Barrett Line Inc. have been placed with American Bridge Co.

Cleveland, June 10.—Plate mills are receiving numerous orders for small

lots. Some of these are held until a carload can be made up and shipped. Pipe lines represent a fair tonnage. Plates are held at 1.70c, Pittsburgh.

Philadelphia, June 10.—Improvement in the plate market reported a week ago is maintained, eastern mills operating at 50 to 90 per cent. Prices in general are more regular, with 1.80c, base, Coatesville, the usual figure, subject to occasional differentials on certain tonnages for structural, railroad and ship work.

CONTRACTS PLACED

1500 tons, six barges for the Barrett Line, Inc., Cincinnati, to American Bridge Co.

Merger Suit Trial May Start June 23

Youngstown, O., June 10.—Trial of the Bethlehem-Youngstown Sheet & Tube Co. merger cases has been tentatively scheduled to start in common pleas court here, June 23. These cases likely are to be tried at the same time, especially those inspired by Myron C. Wick Jr., representative of the Cyrus S. Eaton interests in opposition to the merger of Bethlehem and Sheet & Tube.

The matter of a date for the trial, which had been asked by Mr. Wick to be advanced, came up yesterday afternoon before Judge Jenkins, of the common pleas bench here. Newton D. Baker, of Sheet & Tube counsel, asked that the court assign the trial for June 16 in order that he may be able to follow his plan to take an ocean voyage as soon as possible following upon his recent serious illness.

However, Judge Jenkins said such an early date was out of the question due to his overcrowded docket, but he thought he would be able to fix upon June 23 at least tentatively. Luther Day, of Eaton counsel, said the trial likely will last for two weeks.

Deny Merger Rumors

Cleveland, June 10.—Reports credited vaguely to "financial circles" in New York and other cities have appeared recently to the effect that Bethlehem Steel Corp. is negotiating for acquisition of Pickands, Mather & Co., Cleveland, Lake Superior iron mine operators. The reports were denied here today. It was said officially that no steps looking to such a purchase or merger of the two interests have been or now are contemplated.

Steel Plant Cuts Wages

Pottsville, Pa., June 10.—The Eastern Steel Co. here has reduced wages 10 per cent, effective June 16, according to official announcement. The plant, which makes ingots, billets and structural shapes, is operating under receivership, employing about 700 men. The reduction was accepted as necessary for continuance of operation.

Pipe

Pipe Line Interest Unabated—Public Utilities Take Cast at Chicago—4000 Tons Up in East

OF PARAMOUNT importance in various pipe markets is the continued interest in gas, oil and gasoline lines, more than a half million tons having been placed in recent weeks. This leaves large diameter producers filled up for several months. Spasmodic inquiries and orders are noted in the cast grade, small orders ruling but several inquiries involve up to 3000 tons at a time.

PIPE PRICES, PAGE 84

New York, June 10.—Pending volume in cast pipe is slightly heavier. Awards continue light. Bids on 3000 tons of 6 to 18-inch, mostly class C and D, for Newcastle water district, New York, are pending. Beacon, N. Y., opens bids June 17 on 1000 tons of 10-inch. Subways are taking considerable cast pipe and awards on several sections still pend. Prices are firm with $38.50 to $40.50, delivered New York, prevailing for 6-inch and over class B. Most pipe is moving near the top figure. New York City takes bids June 18 on third quarter requirements of hydrant parts and corporation cocks. About 500 tons are needed for two contractors' lettings for Manhattan, N. Y.

Pittsburgh, June 10.—Additional line pipe projects continue to be noted. Standard Oil Co. of New York has plans well advanced for a 300-mile twin line of 10-inch pipe involving around 55,000 tons to be laid between Tulsa, Okla., and a point 13 miles north of St. Louis. It is reported that this pipe has been tentatively placed to assure delivery when needed. Spang, Chalfant & Co. has booked a 105-mile line of 20-inch pipe involving 18,200 tons. All lapweld mills in this district are well booked on 8-inch or larger for several months. Schedules of buttweld pipe production, however, remain slow. This business shows little change and although slightly more active than 30 to 60 days ago, tonnage involved is small for this period. The situation in oil country goods and various forms of tubing is unchanged, with demand rather quiet. Mill operations continue around 75 per cent.

Buffalo, June 10.—Niagara Falls, Ont., awarded a contract for 12,600 feet of reinforced concrete steel lined pipe for a filtration project to the Societe des Tuyaux Bonna, Paris, on its bid of $89,715. Sharp protest against awarding the contract to a foreign maker failed to change the council's decision.

Youngstown, O., June 10.—Out of the welter of rumors and unconfirmed reports of large gas and petroleum products orders for line pipe and seamless, somewhat more definite information is emanating from authoritative quarters. It now appears that National Tube Co. is booked to capacity operations at McKeesport, Pa., and Lorain, O., mills on large lapweld and seamless tubes to Jan. 1, 1931. Youngstown Sheet & Tube Co. and Republic Steel Corp. is similarly booked to Nov. 1. All makers admit that little new business is being done in buttweld sizes, due to the exceptional falling off in building construction which is even below the usual sasonal recession.

Cleveland, June 10.—Buttweld steel pipe demand remains slow. Jobber sales are limited because of relatively light construction work under way. Buttweld mill operations do not average more than 40 to 50 per cent. Lapweld mills fast are filling up their order book. Sun Oil Co., Toledo, O., has asked permission of Ohio Utilities commission to cancel its 3000 shares of common stock and issue 6000 chares of $100 par value common. It will construct a pipe line from Marcus Hook, Pa., to Cleveland, through Youngstown, O., and enlarge its Youngstown storage plant from 250,000 gallons to 1,000,000 gallons.

Chicago, June 10.—Chicago board of public works is taking further steps to round out its cast pressure pipe program for this year. It is in the market for 200 to 500 tons of 4 and 16-inch. Other orders are expected to be distributed by Chicago later. Sales in Indiana and Wisconsin and other parts of the North Central market remain quiet. Specifications are active by public utilities against contracts. Numerous 50 to 75-ton sales, or even less, bring monthly averages close to a year ago. It is indicated substantial advertised work would bring out concessions.

St. Louis, June 10.—Pipe lines contemplated by Standard Oil Co., and Phillips Pipe Line Co., to terminate in this city, will call for large tonnages of materials. The Standard line will be a twin 10-inch line extending for 300 miles between Tulsa, Okla., and a point near Woodriver, Ill., 13 miles north of St. Louis. It will cost $15,000,000. The Phillips line, costing a similar sum, will extend 1000 miles from the Texas Pan Handle via Kansas City to St. Louis.

Birmingham, Ala., June 10.—Cast pipe lettings are not numerous. In fact the market is denoted as slow. The price base is being maintained at $37 to $38 on 6-inch and larger. Shipments are active and production steady at five days a week. Some have three shifts daily. American Cast Iron Pipe is shipping 7000 feet 6-inch and 3000 feet of 10-inch pipe to Panama canal zone, for city of

Panama and the government. Several small specifications are being bid on, the pipe to be used in municipal developments in California.

CONTRACTS PLACED

360 tons, 16-inch class C cast iron pipe for Bloomfield, N. J., to R. D. Wood & Co., Philadelphia.

Unstated tonnage, 20-inch flexible joint cast iron pipe for line under Coney Island Creek, N. Y., to Warren Foundry & Pipe Co., Phillipsburg, N. J.

STEEL PIPE ORDERS

50,000 tons, 800 miles 8-inch electric welded steel pipe, Phillips Petroleum Corp., for a gasoline transport line from Texas to Wichita, Kansas City, St. Louis and intermediate points, to Republic Steel Corp., Youngstown, O.

18,200 tons, 105 miles of 20-inch steel pipe, to Spang, Chalfant & Co., Pitsburgh.

CONTRACTS PENDING

8700 feet, various sizes, mains and laterals, for Brielle, N. Y.; bids in.

3000 tons, 6 to 18-inch cast iron pipe, class C and D, for Newcastle Water district, N. Y.; bids on contract June 13.

1000 tons, 10-inch cast iron pipe, Beacon, N. Y.; bids June 17.

500 tons, 6 to 12-inch cast iron pipe, for Borough of Manhattan, N. Y.; two contracts, bids June 13.

265 tons, 12 and 16-inch class B, San Francisco; bids June 9.

200 to 500 tons, 4 and 16-inch pipe for Chicago board of public works; bids June 20.

150 tons, mostly 12-inch cast iron pipe for Ossining, N. Y.; general contract placed.

110 tons, 4 to 8-inch class 150, improvement district No. 10, Fullerton, Calif.; bids opened.

STEEL PIPE PENDING

55,000 tons, 300 miles 10-inch steel line pipe for Standard Oil Co. of New Jersey.

Tin Plate

Shipments Satisfactory, While Operations Are Slower

TIN PLATE PRICE, PAGE 84

Pittsburgh, June 10.—Tin plate shipments are holding well and are in good volume for this period. Operations, however, are tapering in keeping with the usual seasonal trend, while specifications remain steady. Output is at 75 to 80 per cent, although tending toward the lower figure. No additional unfavorable crop reports are heard and the outlook for fairly large packs is considered good.

Youngstown, O., June 10.—New business in tin plate is limited to small orders for quick delivery, but shipments are good. The usual May announcement of a price for last half has not been forthcoming and buyers are loath to place contracts until the price is settled. This is expected soon. Shipments are being made at $5.25, Pittsburgh, per base box.

The first steel furnace in Pittsburgh was erected in 1810 by Tuper & McKowan.

Sheets

Prices Reaffirmed for Third Quarter—Bookings Remain Light—Operations Show Recession

LEADING sheetmakers have opened books and reaffirmed prices for third quarter, though in some instances prompt material is offered at lower levels. Little change is noted in the generally light volume of business; automotive requirements are fairly well sustained. Independent mill operations in the Mahoning valley are down to 44 per cent; in the Pittsburgh district 60 per cent.

SHEET PRICES, PAGE 83

Pittsburgh, June 10.—Sheet business continues seasonally light. Demand shows little further decline although operations are lower at around 60 per cent. Business from the automotive industry is fairly well sustained, while requirements of most other large consumers are off moderately from the May rate. Some producers have opened books for third quarter, with prices unchanged from current levels of 2.55c for black sheets, 3.20c for galvanized, 2.15c for blue annealed sheets and 2.00c for blue annealed plates, and 3.70c for autobody. Prices remain fairly steady with less competition noted in blue annealed material from the continuous mill product. Prices on continuous plates are steadier at 1.80c, with 1.95c generally the minimum on 13-gage on sizes wider than 24 inches. Long ternes are easier with 3.65c to 3.75c now the market.

New York, June 10.—Announcement of third quarter prices on sheets is expected shortly. Meanwhile, the market is moderately steady at 3.20c, Pittsburgh, on galvanized sheets; 2.55c on black, 2.00c on blue annealed plates, and 2.15c on blue annealed sheets. Demand is sluggish.

Buffalo, June 10.—Severe competition is disturbing sheet prices in this district. Some sellers quote black sheets at 2.55c, base, Pittsburgh. Buyers are deferring contracts for next quarter.

Cleveland, June 10.—Sheet specifications have been further curtailed and inquiry is lacking. Some mills are making an effort to hold black sheets at 2.55c, Pittsburgh, but 2.45c has appeared. Autobody sheets are available in large lots at 3.60c, $2 a ton less than the recent minimum of 3.70c, which now is the price on contract lots. Buyers of metal furniture sheets now ask for a 3.70c price. Makers of parts for Ford and Chevrolet are on a slower basis than in May.

Cincinnati, June 10.—Some sheet mills in this district have reduced production schedules to 40 to 50 per cent. Further shrinkage in business is due to seasonal influences.

Chicago, June 10.—Sheet producers have opened books for third quarter and are reaffirming recent prices. Specifications are irregular and hot mills are operating this week at about 50 per cent. Blue annealed tonnage continues to lead. Chicago district mill quotations are 2.65c for No. 24 black, 3.30c for No. 24 galvanized, 2.25c to 2.35c for No. 13, and 2.10c to 2.20c for No. 10 blue annealed.

St. Louis, June 10.—A moderate improvement is noted in demand for sheets, chiefly in the heavier gages. Automotive sheet specifications have not increased. Prices are unchanged.

Youngstown, O., June 10.—New business in sheets has dropped to negligible proportions and independent mill operations now are at 44 per cent. Sheet mills of the Sharon Steel Hoop Co. did not start this week until Tuesday but will continue on full the remainder of the week. Falcon mills at Niles are operating, but the Western Reserve at Warren, and Liberty at Leavittsburg are down. Some other mills are at 50 per cent, but the Mahoning Valley Steel Co. is at 75 per cent. Prices have been reaffirmed for third quarter by all important independent makers in eastern and northern Ohio. The schedule follows: Common black, 2.55c, Pittsburgh; galvanized, 3.20c; blue annealed, 2.00c for 9 and 10 gage, 2.15c for 13 gage; autobody, 3.70c; furniture, 3.80c; tin mill black, 2.80c.

Philadelphia, June 10.—Sheet demand has improved slightly, current business including some good size orders, such as 300 tons of black sheets. Prices are less irregular, but 2.00c and 2.15c for blue annealed; 3.15c for galvanized and 2.55c for black are subject to occasional differentials. Strip sheets continue 1.80c to 1.85c, base, Pittsburgh, plus $3 a ton for light gages.

Republic Mill Altered

Youngstown, O., June 10.—To coordinate recent changes in its strip mill at Warren, O., Republic Steel Corp. announces expansion of other plant facilities there involving an expenditure of $300,000. Strip mill capacity was recently changed from 18-inch to 32-inch capacity and furnace enlargement is now being effected.

Drawback Is Allowed

Washington, June 10.—The treasury department has announced allowance of drawback on high speed steel rods produced by Anchor Drawn Steel Co. Latrobe, Pa., from high speed steel manufactured by the Vanadium Alloys Steel Co. under drawback provisions of July 1, 1929.

Structural Shapes

Fairly Active Week Opens June—Pending List Attractive—1.70c Usually Done, but Occasionally Shaded on Large Tonnages

ELEVEN structural steel awards in the 1000 to 4000-ton range this week, as well as a fairly large number of smaller lettings, roll up a fairly high aggregate, in excess of 30,000 tons. That June will come up to May total, which for Metropolitan New York was the largest month of the year, is hardly the expectation of the trade, despite the prospects of early closing on several attractive jobs, such as a 4370-ton subway in New York and a 4000-ton automobile plant in California. A New York hospital, 2800 tons, a grade crossing elimination at Syracuse, N. Y., 2500 tons, and a paper mill in Florida, 2000 tons, lead in the past week's orders. May shipments were heavy. Structural mills average 70 per cent. Prices usually are based on 1.70c, Pittsburgh. Competition is keen.

STRUCTURAL SHAPE PRICES, PAGE 83

New York, June 10.—May awards in structural steel, exclusive of engineering projects, aggregated 58,431 tons, according to New York Structural Steel Board of Trade. This was the heaviest month of the year and compared with 26,726 tons for April. Local lettings mounted last week, including a 2850-ton hospital, a 1400-ton apartment and a 3500-ton office building, the latter placed tentatively. A 2500-ton grade crossing at Syracuse, N. Y., also was awarded. Heavy pending work, most of which has been on the boards for some time, is approaching maturity. Another subway, slated for June 27 closing, will take 4370 tons. Prices, although still weak, appear somewhat steadier. Shading is less drastic and sellers believe they have touched bottom. Many shipments were heavy but most fabricators still have good order books, especially the smaller shops.

Boston, June 10.—Two construction jobs let in this district last week aggregated less than 700 tons. A Kresge Co. store at Providence, R. I., 380 tons, went to Lehigh Structural Steel Co., and 300 tons for an indoor baseball field at Amherst, Mass., went to Palmer Steel Co. A theater, 100 tons, is pending at Providence.

Philadelphia, June 10.—Demand for plain structural shapes has improved somewhat. The market reflects a steadier condition and less selling pressure is evident. Plain standard material continues 1.70c to 1.85c, base, eastern mills. The outlook has improved because a larger volume of work now is being figured.

The position of eastern fabricating shops became greatly improved during the past month. Some good sized fabricators in this district, operating around 50 per cent early in May now are at 75 per cent. Whereas they only had about six weeks' work ahead, they now have two to three months work ahead. One large fabricator, operating full right along, continues on that basis and has extended his backlog.

Cleveland, June 10.—Fabricators are working out of their filled up condition and many shops now stand badly in need of orders. Awards are light, confined to small lots. New inquiries are few, although a number of old ones still are open. Plain material stands at 1.70c, base, Pittsburgh. Included in recent lettings is a small building for the Lamson & Sessions Co., 150 tons, which went to T. H. Brooks Co., and a 100-ton car shop building for the Cleveland Interurban Railroad Co. which went to Massillon Bridge & Structural Co. A library at Athens, O., 360 tons, went to Hiner Structural Steel Co.

Pittsburgh, June 10.—Fabricators in this district maintain fairly steady operations. Specifications for plain material have been at a corresponding rate. Awards continue light, and inquiry involves but few large individual tonnages. The market on plain material generally is 1.70c, Pittsburgh.

Chicago, June 10.—Structural awards are irregular in the Chicago area and specifications permit barely 70 per cent operations for structural mills. Public works and railroad tonnage leads. Chicago & North Western is deferring action on its 3600-ton inquiry for bridge work. Fresh inquiries total 4000 to 5000 tons. It is expected the Chicago board of education will take action this week on 4500 tons for Lane Technical high school. Plain material prices are based on 1.80c, Chicago.

Birmingham, Ala., June 10.—Structural business is not coming up to exceptations. Some curtailment of operations has resulted. Shops, working full time and some with a little overtime, now are down to a 5-day week. International Paper Co.'s paper mill, Panama City, Fla., went to a St. Louis fabricator and 1100 tons for Tennessee Coal, Iron & Railroad Co.'s sheet-plate mills at Fairfield, Ala., has not been awarded. Ingalls Iron Works Co. took 1000 tons for blacksmith shop for Norfolk & Western railroad at Roanoke, Va., and 100 tons for power house at Cordele, Ga.

Awards Compared

	Tons
Awards this week	30,992
Awards last week	21,285
Awards two weeks ago	37,880
Awards this week in 1929	38,386
Average weekly awards, 1930	34,391
Average weekly awards, 1929	42,213
Average weekly awards, May	48,522
Total awards to date, 1929	1,015,175
Total awards to date, 1930	825,381

CONTRACTS PLACED

4000 tons, pier F, Pennsylvania railroad, Jersey City, N. J., to American Bridge Co.

2800 tons, Psycopathic hospital, First avenue and Twenty-ninth street, New York, to American Bridge Co., New York, through R. E. Smith Co., general contractor.

2500 tons, grade crossing elimination, New York Central railroad, Syracuse, N. Y., to McClintic-Marshall Co.

2000 tons, building for International Paper Co., Panama City, Fla., to Stupp Bros. Bridge & Iron Co., St. Louis.

1800 tons, building, Merchants National bank, Battle Creek, Mich., to R. C. Mahon Co., Detroit.

1400 tons, 19-story apartment, Eighth avenue and Twenty-third street, New York, to Easton Structural Steel Co., New York; Arthur Greenbaum, builder; Emery Roth, architect.

1100 tons, office building addition, 610 Hill street, Los Angeles, to McClintic-Marshall Co.

1000 tons, plant, Bendix Aviation Corp., South Bend, Ind., to R. C. Mahon Co., Detroit.

1000 tons, buildings, Phoenix Utility Co., Trinidad, Tex., to Mosher Steel & Machinery Co., Dallas, Tex.

1000 tons, Loew theater, Jamaica, N. Y., to American Bridge Co., New York.

1000 tons, blacksmith shop, Norfolk & Western railroad, Roanoke, Va., to Ingalls Iron Works Co., Birmingham, Ala.

950 tons, state highway bridge, Irving, N. Y., to Lackawanna Steel Construction Corp., Buffalo.

830 tons, loft and store building, Seventh and Thirty-seventh streets, New York, to Paterson Bridge Co., Paterson, N. J., through Joseph Gilberg, general contractor.

700 tons, viaduct, New York Central railroad, Sixty-fifth street, New York, to McClintic-Marshall Co.

675 tons, buildings, Fisher Body Ohio Co., Cleveland, to Jones & Laughlin Steel Corp., Pittsburgh, instead of R. C. Mahon Co., Detroit, as noted last week.

550 tons, general construction, Shaker farm jail, New York, to Shipper's Car Line Corp., Milton, Pa., through Marinello & Staneo, general contractors, Albany, N. Y.

532 tons, Bucklin street Junior high school, Providence, R. I., to James H. Tower Iron Works, Providence, through E. Turgeon, general contractor, 35 Exchange place, Providence, R. I.

500 tons, addition, Murray Hill-Guggenheim Dental Clinic, East Seventy-second street, New York, to Hedden Iron Construction Co., New York.

500 tons, building, Harvard university, to Lehigh Structural Steel Co., Allentown, Pa.

500 tons, 12-story building, American Red Cross, Lexington avenue and Thiryt-eighth street, New York, to American Bridge Co., New York, through Edward Corning Co., general contractor.

450 tons, telephone building, Sixth and Elm streets, Long Beach, Calif., to Consolidated Steel Corp., Los Angeles.

400 tons, school No. 13, Queens, New York, to

Eastern Structural Steel Co., Easton, Pa., through Supreme Construction Co.

380 tons, Kresge Co., store, Providence, R. I., to Lehigh Structural Steel Co., Allentown, Pa., through Minton Scobel & Co., Cleveland, general contractors.

320 tons, highway bridge, Punkhannock, Pa., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

300 tons, library, Athens, O., to Hiner Structural Steel Co., Canton, O.

300 tons, indoor baseball field, Amherst, Mass., to Palmer Steel Co., Springfield, Mass., through J. G. Roy & Co., Springfield, general contractors.

300 tons, garage, 318 East Forty-eighth street, New York, to Kues Bros. Iron Works, Bronx, N. Y.

300 tons, Queets river bridge, Jefferson county, Washington, to Wallace Bridge & Structural Steel Co., Seattle, through Charles G. Huber, Seattle, general contractor.

300 tons, roundhouse improvement, Pennsylvania railroad, West Philadelphia, Pa., to McClintic-Marshal Co.

225 tons, soaking pits, Gulf States Steel Co., Alabama City, Ala., to Nashville Bridge Co., Nashville, Tenn.

200 tons, 9-story addition and tower, Elks building, Oklahoma City, Okla., to Carolina Steel & Iron Works Co., Greensboro, N. C.

200 tons, novitiate chapel, Philadelphia, to McClintic-Marshall Co.

200 tons, museum building, University of Vermont, Burlington, Vt., to Lehigh Structural Steel Co., Allentown, Pa.

200 tons, garage, Greenwich and Ferry streets, New York, to Cosmic Iron Works, Bronx, N. Y.

200 tons, building, Federal Cold Storage Co., Pittsburgh, to McClintic-Marshall Co.

200 tons, store building, Kresge Co., Rochester, N. Y., to R. S. McMannus Steel Construction Co., Buffalo.

200 tons, Lawndale avenue bridge, Detroit, for Michigan Central railroad, to American Bridge Co.

160 tons, additional bridge work, Bangor & Aroostook railroad, to Bethlehem Steel Co.; noted as 540 tons going to unstated interest in IRON TRADE REVIEW of May 29, should have been 700 tons.

150 tons, building, Lamson & Sessions Co., Cleveland, to T. H. Brooks Co., Cleveland.

150 tons, highway bridge, Cunningham, W. Va., to Pittsburgh-Des Moines Steel Co., Pittsburgh.

150 tons, theater and office building, Burlington, Vt., to Porcupine Co., Bridgeport, Conn.

125 tons, store, Montgomery & Co., Chester, Pa., to Bethlehem Fabricators Inc., Bethlehem, Pa.

120 tons, state highway bridge, West Stewartown, N. Y., to Kittridge Bridge Co.

100 tons, hospital, Newton, N. J., to B. Katchen Iron Works, Jersey City, N. J., through J. Lowry, general contractor.

100 tons, car shop building, Cleveland Interurban Railroad Co., Cleveland, to Massillon Bridge & Structural Co., Massillon, O.

100 tons, renovations, St. Bartholomew's church, New York, to Elby Structural Steel Co., New York, through James Baird Co. Inc., general contractor.

100 tons or more, Cole's Mill Bridge, Westchester County, New York, to Elby Structural Steel Co., New York.

100 tons, building addition, Stamford, Conn., to Porcupine Co., Bridgeport, Conn.

100 tons, textile and shop buildings, Alabama Polytechnic institute, Auburn, Ala., to Ingalls Iron Works Co., Birmingham, Ala.

100 tons, power house at Cordele, Ga., for Crist County Power Co., to Ingalls Iron Works Co., Birmingham, Ala.

100 tons, warehouse, Central Illinois Public Service Co., Marion, Ill., to cost $100,000, to Austin Co., Cleveland.

CONTRACTS PENDING

25,000 tons, office building, Metropolitan Life Insurance Co., New York.

15,000 tons, Pennsylvania railroad terminal, West Philadelphia, Pa.

10,000 tons, building, 94 Broad street, New York.

7000 tons, Tudor City building, New York.

6000 tons, apartment and garage, Philadelphia.

5000 tons, building, New York Bell Telephone Co., New York.

5000 tons, technical school for boys, Brooklyn, N. Y.

4370 tons, subway, route 106, section 7, Bronx, N. Y.; general contract bids June 27.

4000 tons, assembly plant for Ford Motor Co., at Richland, Calif.

4000 tons, building, National Bank of the Republic, Chicago.

2500 tons, government assay office, New York.

2000 tons, administration building, board of education, Philadelphia; bids on general contract rejected, new bids to be taken.

2000 tons, travel and transportation building, Chicago World's Fair, Chicago; bids June 20.

1400 tons, pier, Reading Co., Philadelphia.

1200 tons, mill building, San Francisco.

1200 tons, Chicago Yacht club, Chicago.

1200 tons, building, Southern New England Telephone Co., Hartford, Conn.

1000 tons, building, Western Union Telegraph Co., Boston.

750 tons, building for Pacific States Cast Iron Pipe Co., at Provo, Utah.

615 tons, state bridge over Salinas river, Monterey county, California; bids received.

566 tons, county bridge over Salinas river, Monterey county, California; bids opened.

500 tons, highway bridges, New York state.

500 tons, store, S. S. Kresge Co., Waterbury, Conn.

400 tons, theater, Warner Bros., Wilkinsburg, Pa.

350 tons, trestle, Pennsylvania railroad, West Philadelphia, Pa.

350 tons, St. Agnes hospital, Philadelphia; general contract to Nelson Pedley Construction Co.

300 tons, bridge, Pennsylvania railroad, Cincinnati.

300 tons, parochial school, Mineola, Long Island, N. Y.

250 tons, bridge, Salem county, New Jersey.

210 tons, transfer bridge, Pennsylvania railroad, Greenwich Point, Philadelphia.

200 tons, bridge, New York Central railroad, Knowlesville, N. Y.

200 tons, four bridges, Louisville & Nashville railroad, to cost $1,000,000; steel to be let as soon as masonry work to be done by railroad workmen is complete. They will span the Tennessee, Wolff, Big Hatchie and Loosahatchie rivers.

150 tons, bridge, Pennsylvania railroad, Xenia, O.

100 tons, theater, Providence, R. I.

Concrete Bars

Three Leading Awards Total 3925 Tons—Important Road Lettings Anticipated

LARGE contracts appear from time to time among numerous small lot lettings, although new inquiry is slack. Included this week are an 1125-ton ice plant at Pittsburgh, a 1500-ton tunnel at Galesburg, Ill., and a 900-ton warehouse at Philadelphia. Tonnage for the storm sewer project at Louisville, Ky., has been revised to 5100 tons. State road work continues to take important tonnages.

REINFORCING BAR PRICES, PAGE 83

New York, June 10.—Concrete reinforcing bar prices, still shaded on large lots, are fairly steady on smaller tonnages. Pending volume in this territory is heavy, including piers, bridges, industrial buildings, engineering and road projects. Some estimates place pending business the largest of the year. Several sellers hold the opinion that prices have about struck bottom. Bar buyers still bear down on prices, but close contracts with less delay. Lettings are fairly large. Roadwork demand is brisk and mesh buying continues heavy. On small lots reinforcing bars are fairly firm at 2.54c, New York.

Boston, June 10.—Limited tonnages placed in concrete bars last week aggregated about 150 tons. A plant for F. S. Webster & Co., East Boston, manufacturer of electrical goods, 350 tons, and unit No. 4 for Harvard university, 150 tons, still await award.

Pittsburgh, June 10.—Concrete bar awards continue to involve small ots. One exception is the 1125-ton building here for City Ice & Fuel Co., placed with Carlem Engineering Co. Total incoming tonnage to the mills is well sustained and is seasonally heavy. Prices remain 1.75c to 1.80c, Pittsburgh, for stock lengths and 2.00c to 2.05c for cut lengths, with larger tonnages generally taking the minimum figures.

Cleveland, June 10.—After several quiet weeks when only small lots of concrete bars were bought, the placing of 1300 tons for the Fulton road bridge with the Bourne-Fuller Co. division of Republic Steel Corp. quickens interest. Additional piers for Central-Lorain bridge will probably be purchased at an early date by Lowensohn Construction Co., the successful bidder for the general contract. This will mean another 1000 tons. While prices as low as 1.60c and 1.65c, Cleveland, have been uncovered, the usual quotatinos are 1.70c to 1.75c, Cleveland.

Chicago, June 10.—Illinois state highway department will let 1500 tons of reinforcing bars for road work this week. Galesburg, Ill., has let 1500 tons for its sewage disposal tunnel, and 600 tons were closed for the Railway Express Agency terminal in Chicago for Chicago & North Western railroad. A large volume of small-lot inquiry has developed. Quotations of 1.70c to 1.75c for rail steel bars are being shaded.

Some reinforcing bar prices are down, Chicago rail steel now being 1.65c to 1.70c. Road and bridge work

Awards Compared

	Tons
Awards this week	8,965
Awards last week	3,698
Awards two weeks ago	5,023
Awards this week in 1929	4,558
Average weekly awards, 1929	5,849
Average weekly awards, 1930	7,041
Average weekly awards May	8,227
Total awards to date, 1929	156,207
Total awards to date, 1930	168,994

bars are unchanged. Chicago billet bars, 30 tons or more at a time, are 1.85c, while lots under 30 tons, carry 2.45c.

CONTRACTS PLACED

1500 tons, tunnel for sewage disposal works, Galesburg, Ill., to Inland Steel Co.
1300 tons, Fulton road bridge, Brookside park, Cleveland, to Bourne-Fuller Co., division, Cleveland, Republic Steel Corp., Youngstown, O., through Hunkin-Conkey Construction Co., general contractor.
1125 tons, building, City Ice & Fuel Co., Pittsburgh, to Carlem Engineering Co., Pittsburgh.
900 tons, warehouse, Consolidated Packing Co., Philadelphia, to Kalman Steel Co., Philadelphia.
600 tons, Railway Express Agency terminal building, Milwaukee avenue, Chicago, for Chicago & North Western railroad, to Inland Steel Co., Chicago, previously reported to unstated fabricator.
440 tons, building, Bell Telephone Co., Louisville, Ky., to E. J. Whalen Steel Construction Co., Louisville, through Barge-Thompson Co., Atlanta, Ga., general contractor.
380 tons, bridge approaches, Aurora, Ill., to Truscon Steel Co., Chicago.
375 tons, Racine county court house, Racine, Wis., to Joseph T. Ryerson & Son Inc., Chicago.
350 tons, addition to Morrison hotel, Chicago, to Olney J. Dean Co., Chicago, through John Griffiths & Son Co., general contractor.
300 tons, Shaker Farm jail, New York, to Albany Steel & Iron Supply Co., Albany, N. Y., through Marinello & Staneo, Albany, general contractors.
290 tons, Bucklin street junior high school, Providence, R. I., to Truscon Steel Co., Providence, through E. Turgeon, 30 Exchange place, Providence, general contractor.
250 tons, street improvement work, Claremont, Calif., to unstated interest.
200 tons, office building addition, 6235 Hollywood boulevard, Los Angeles, to unstated interest.
155 tons, Monaca-Rochester bridge, Beaver county, Pennsylvania, to Electric Welding Co., Pittsburgh.
150 tons, Illinois state road work, to Olney J. Dean Co., Chicago.
150 tons, viaduct, Page avenue, Staten Island, N. Y., to McClintic-Marshall Co., New York, through W. H. Gahagan Inc., Brooklyn, N. Y., general contractor.
100 tons, garage, Krugg Baking Co., Jamaica, N. Y., to Truscon Steel Co., New York, through James Baird Co. Inc., general contractor.
100 tons, spur foundations, Baltimore & Ohio railroad, Staten Island, N. Y., to McClintic-Marshall Co., New York; through Costello Construction Co., general contractors.
100 tons, state highway work, Washington, to Northwest Steel Rolling Mills.
100 tons, textile and shop buildings, Alabama Polytechnic institute, Auburn, Ala., to Gulf States Steel Co., Birmingham, Ala.
100 tons, William Eliot Jr. high school, Washington, to Truscon Steel Co., Youngstown, O.

CONTRACTS PENDING

5100 tons, for storm sewer project of Louisville, Ky.; bids by June 26; tonnage estimate revised.
1000 tons, additional piers, Central-Lorain bridge, Cleveland; general contract to Lowensohn Construction Co., Cleveland.
500 tons, hospital building, University of Illinois, Urbana, Ill.
500 tons, state road work for New Jersey; bids in.
450 tons, school, board of education, Louisville, Ky.
400 tons, for underpass, Kentucky & Indiana railroad, Louisville, Ky.
400 tons, subway, route 106, section 7, Bronx, N. Y.; bids June 27.
350 tons, hospital for Stanford university, Palo Alto, Calif.; bids received.
315 tons, paving in San Diego county, Sacramento, Calif.; bids June 25.
300 tons, hotel addition, 125 South Grand street, Pasadena, Calif.; bids being received.
200 tons, Chicago Yacht club, Chicago.

Rails, Cars

Erie's 200-Car Award Leads Limited List—Car Shops Fast Depleting Order Books

LIVE inquiries for railroad cars total only about 3200. Some of these will not be acted upon until July 15, at which time most car shops will have dissipated their order books. Erie placed 200 freight cars, and two inquiries are out from Mexico for 119 and 115 cars, respectively. While Canadian Pacific placed ten locomotives, inquiries and orders in this country have receded.

RAILROAD TRACK PRICES, PAGE 84

Chicago, June 10.—Miscellaneous rail orders, including 500 tons for an electric line in Missouri, totaled less than 2000 tons. Rail mill operations have receded to about 70 per cent. Three or four round tonnages of tie plates and fair specifications for other track accessories are expected to maintain better than average track fastenings output for the next few weeks. Rush shipments are asked on accessory shipping orders. Bids on the 2300 Illinois Central cars, which were delayed beyond the May 28 closing date, now are in. The order may not be closed until about July 15. Freight car builders in the Chicago area are expected to complete pending work by the last week in July. Operations now are slightly above 80 per cent. Chesapeake & Ohio cars now being started comprise the last important order of the present building season.

New York, June 10.—Chief activity in railroad car market this week is found in the award by Erie of 200 freight cars. American Car & Foundry Co. received orders for 150 hoppers and Pressed Steel Car Co. 50 gondolas. Otherwise both orders and inquiries have been light. The same thing is true of locomotives. In all only about 3200 freight cars are actively pending. Campania del Ferrocarril Mexican is inquiring for 119 miscellaneous freight cars, and an unstated number of passenger cars.

Pittsburgh, June 10.—The market for rails, track accessories and freight cars continues quiet with inquiry light. Specifications remain fairly steady and shipments show little change from a month ago. Car builders are completing old orders and the outlook for new business is poor with nothing further heard of prospective buying by the New York Central or Pennsylvania railroads. Prices continue steady on track material.

Birmingham, Ala., June 10.—A late order for rails warrants continued operation of the Tennessee Coal, Iron & Railroad Co. rail mill at Ensley, Ala., this week. The shutdown then will be for six to eight weeks.

CAR ORDERS PLACED

Chicago, Burlington & Quincy, five gasoline-electric rail motor cars, to Pullman Car & Mfg. Corp.
Erie, 200 freight cars: 150 hoppers, to American Car & Foundry Co. and 50 gondolas to Pressed Steel Car Co.
International Nickel Co. of Canada, unstated number of dump cars to cost $150,000; order reported divided equally between Canadian Car & Foundry Co. and National Steel Car Co.
Missouri-Kansas-Texas, three dining cars, to American Car & Foundry Co.
Northwestern Refrigerator Line, 50 refrigerator cars, to own shops; underframes, to American Car & Foundry Co., New York.
United Fruit Co., 25 banana cars, to the Magor Car Corp.

LOCOMOTIVE ORDERS PLACED

Canadian Pacific, 10 locomotives, to Montreal Locomotive Works, a subsidiary of American Locomotive Co.
South African Iron & Steel Corp. Ltd., Pretoria, South Africa, one locomotive, to Baldwin Locomotive Works.

CAR ORDERS PENDING

Campania del Ferrocarril Mexican, 119 freight cars, comprising 85 30-ton steel box cars, 15 40-ton steel automobile cars, 15 40-ton flats, four cabooses and an unstated number of passenger cars.
Erie, eight passenger coaches.
National Railways of Mexico, 115 miscellaneous freight cars and four coaches.
Richmond, Fredericksburg & Potomac, two coaches.
Union Pacific, 14 chair cars, 10 baggage cars and one baggage and mail car.

RAIL ORDERS PENDING

Norfolk & Western, 40,000 tons.
Pittsburgh & West Virginia, 5000 tons.

Steel Bookings Shrink

New York, June 10.—Unfilled orders of the United States Steel Corp. May 31 totaled 4,059,227 tons, a decline of 294,993 tons or 6.7 per cent from April 30. Not since last August has any month shown so heavy a loss, as the following comparison reveals:

Date	Total	Change, tonnage	Change, per cent
Jan. 31, 1929	4,109,487	132,775+	3.34+
Feb. 28, 1929	4,144,341	34,854+	0.84+
Mar. 31, 1929	4,410,718	266,377+	5.70+
April 30, 1929	4,427,763	17,045+	0.38+
May 31, 1929	4,304,167	123,596—	2.88—
June 30, 1929	4,256,910	47,257—	1.10—
July 31, 1929	4,088,177	168,733—	3.90—
Aug. 31, 1929	3,658,211	429,966—	10.50—
Sept. 30, 1929	3,902,581	244,370+	6.68+
Oct. 31, 1929	4,086,562	183,981+	4.71+
Nov. 30, 1929	4,125,345	38,783+	0.95+
Dec. 31, 1929	4,417,193	291,848+	7.74+
Jan. 31, 1930	4,468,710	51,517+	1.20+
Feb. 28, 1930	4,479,748	11,038+	0.25+
Mar. 31, 1930	4,570,653	90,905+	2.03+
April 30, 1930	4,354,220	216,433—	4.73—
May 31, 1930	4,059,227	294,993—	6.78—

Wire

Some Improvement Seen in Demand in a Few Markets—Shipments Less Than May

MANUFACTURERS' wire buying rate better than other grades. Jobbers are taking somewhat more tonnage in some centers, though their tonnage is below the seasonal average. No announcement has been made of third quarter prices though it is understood current quotations would apply. Prices are holding fairly well but some concessions are being made.

WIRE PRICES, PAGE 84

Pittsburgh, June 10.—Business in manufacturers' wire continues fairly steady. Demand for jobbers' products shows slight improvement although activity still is seasonally light. Shipments of all products are off only moderately from the May rate. Third quarter inquiry is reported fairly active; producers generally, however, have taken few contracts. Some producers are expected to take new business at current prices of $2.15 for wire nails, 2.30c for plain wire and $36 for wire rods. Believing that current prices represent the bottom of the market, some producers are looking for higher levels next quarter.

Worcester, Mass., June 10.—Wire production is little changed although business is beginning to lag. A further cut in production schedules seems imminent. Plain bright wire to dealers is quoted at 2.40c, base, Worcester.

New York, June 10.—The wire and nail market is the steadiest in some time with nails at $2.15, Pittsburgh, and wire at 2.30c, Pittsburgh. Trading is light, with little improvement in sight.

Philadelphia, June 10.—Nails continue weak with the usual price 2.15c, Pittsburgh, but with occasional shading. Plain wire is firm at 2.30c, Pittsburgh.

Cleveland, June 10.—Orders for wire, wire nails and other wire products continue small. Jobber turnover is slow. Prices show no further weakness, $2.15, Cleveland, being named on nails and 2.30c on wire.

Chicago, June 10.—Buying of common wire products, which recently made some gains, again has slowed down. Jobber buying also is lighter. Western wire nails are ready to take tonnage for third quarter at present quotations based on 2.35c, Chicago or western mills, for bright plain wire, and 2.35c to 2.45c for annealed fence wire. Prices are holding fairly well, but concessions are reported. Practically no backlogs of manufacturers' wire are shown.

Bid for Chain, Castings

New York, June 10.—Superintendent of light house, Staten Island, N. Y., takes bids June 17 for approximately 340 tons of open-link, wrought iron buoy chain, ¾ to 1⅝ size, also about 20 tons of buoy bridle chain and miscellaneous tonnage of wrought iron connecting shackles for light ship chain, and steel buoy shackles with split keys and shackles with riveted pins.

Bids will be taken June 20 for 260 pieces of cast iron sinkers and ballast balls, each with forging cast in, weighing 120 to 8500 pounds, a total weight of 415 tons. Also on that date, 169 can and nun buoys, welded type; 26 can and nun buoys, riveted construction; 12 ball type can and nun buoys; 11 bell buoys ad two whistle buoys. Tonnage of buoys is estimated at about 400 tons, with castings for the can and nun buoys weighing approximately 800 pounds each.

Cold Finished Steel

Price Continues for Third Quarter—Orders Still Are Light

COLD FINISHED PRICES, PAGE 84 ....

Cleveland, June 10.—Cold-finished bar orders from the automotive industry are increasingly light, including machine screw products manufacturers. They are but fair from other consuming lines but so far no disposition is encountered further to cut the price. Quotations remain 2.10c, Cleveland, but a lower base obtains for large automotive business at Detroit.

Pittsburgh, June 10.—Little change is noted in specifications for cold-finished bars, while shipments also are holding well to the rate of the preceding several weeks. Requirements of some automotive buyers are tapering although little change is noted in demands of the leading interests. Inquiry for third quarter as yet is light, with the market continuing 2.10c.

Strip

Smaller Specifications Come Out—Some Price Concessions as Demand Shows Decrease

OTHER users of strip steel are specifying at a better rate than automotive consumers, and total tonnage shows little change from a week ago. Some shading of prices is being done. Third quarter prices have not been announced, but mills are willing to book tonnage at prevailing quotations. Production remains fairly steady at the low rate which has prevailed for several weeks.

STRIP PRICES, PAGE 84

Pittsburgh, June 10.—Strip steel specifications from other than automotive buyers make a better showing than requirements of the motor car industry. Total incoming tonnage shows little change over the past week but is slightly below the rate a month ago. Cold-rolled strip continues quiet with mill operations holding at 30 to 35 per cent. Hot-mill schedules continue 65 to 75 per cent. Formal price announcement for third quarter is lacking but some mills are prepared to take contracts at the old prices of 1.70c and 1.80c for hot strip and 2.45c to 2.55c for cold strip. These prices generally are steady although some hot strip tonnage is going at $1 less, while the usual differential to the largest automotive customers prevails.

New York, June 10.—Strip business remains dull, with cold-rolled material easy at 2.50c to 2.55c, Pittsburgh, and hot strip at 1.70c to 1.80c, Pittsburgh, for wide, and 1.80c to 1.90c, for narrow.

Cleveland, June 10.—Further shrinkage is reported in strip steel consumption. Parts makers for low priced automobiles, hitherto the mainstay of the market, are now curtailing releases. Prices are the same as a week ago, 2.45c to 2.55c, Cleveland, being named on cold, with 1.70c and 1.80c, Pittsburgh, on hot, for wide and narrow, respectively.

Philadelphia, June 10.—Hot-rolled strip continues 1.70c and 1.80c base, Pittsburgh, for wide and narrow widths, respectively. Cold-rolled strip is 2.45c to 2.55c.

Youngstown, O., June 10.—Hot-rolled strip quotations for third quarter also have been reaffirmed, for narrow strip 1.80c, Pittsburgh, and up to 24-inch, 1.70c.

Chicago, June 10.—Concessions are being made in hot-rolled strip quotations, which are regarded as nominal at 1.80, Chicago, for widths up to 24 inches, and 1.90c for 6 inches and under. Hot mills remain at about 60 per cent of operating capacity.

Nonferrous Metals

Most Prices Hold at Steady Levels Despite Dullness in Demand—Little Indication Is Seen of Change in Current Shipment Rates

Prices of the Week, Cents a Pound

	Copper—Electro delivered	Copper—Lake delivered	Copper—Casting refinery	Straits Tin—New York Spot	Straits Tin—New York Futures	Lead New York	Lead East St. Louis	Zinc St. Louis	98-99% Aluminum	Spot Antimony	Ingot Nickel
June 4	13.00	13.10	12.62½	30.12½	30.65	5.50	5.40	4.65	23.90	7.12½	35.00
June 5	13.00	13.10	12.50	30.60	30.95	5.50	5.40	4.65	23.90	7.12½	35.00
June 6	13.00	13.10	12.50	30.87½	31.30	5.50	5.40	4.60	23.90	7.12½	35.00
June 7	13.00	13.10	12.50	30.87½	31.30	5.50	5.40	4.60	23.90	7.12½	35.00
June 9	13.00	13.10	12.50	30.87½	31.30	5.50	5.40	4.60	23.90	7.12½	35.00
June 10	13.00	13.10	12.50	30.37½	30.80	5.50	5.40	4.60	23.90	7.10	35.00

NEW YORK, June 10.—Prices of nonferrous metals have been fairly steady through a week of dullness. Zinc has been an exception, with easiness from 4.65c to 4.60c, East St. Louis. The relative stability of prices has been due largely to the fact that producers believed new business could not be stimulated at the present time by concessions in prices.

Little indication is seen in any change in the current rates of shipments. Not much news has come out on the stronger side of the market. Brass and copper products are in a quiet market so far as new business is concerned, while specifications against the recent large orders are of moderate size in brass and of fair size in copper wire.

Copper—Prices are steady on the basis of 13.00c, Connecticut, but nothing of the recent tone of strength is evident in the market at present. In the outside market some small lots of copper are offered at concessions of ⅛-cent or more, but they attract little attention. May statistics, to appear soon, are expected to show very little change in refined stocks held by producers. In other words, new supplies and shipments are believed to be well balanced. The prospect of statistics would seem to encourage steadiness, but the trade is watching closely to see whether custom smelters will be able to withstand a quiet spell on sales.

Zinc—Prime western prices have been cut after a period of a few weeks in which they appeared relatively stable. Sales in May were of good size under present business conditions. In fact, they were the largest since January, but producers were disappointed in the month's shipments. At 38,669 tons, deliveries were 2000 tons smaller than in April, and except for December were the smallest in several years, while stocks amounted to 101,744 tons, making an increase of about 24,000 tons so far this year.

Tin—Prices recovered fractionally with a small improvement in buying a few days ago, but since then there has been little change. Stability over the week-end was merely due to the Monday holiday in London as New York does little trading when London is closed. For the week as a whole, sales remained unusually small, as they have been for several weeks. Buyers are afraid of the market because production continues well above consumption. New talk has emanated from London the past week of plans for curtailment but specific information on the subject from the mines is lacking.

Lead—Prices have been firm. It is believed that a large part of June requirements remains to be covered.

Aluminum—New business is light, but prices are unchanged.—*Daily Metal Trade.*

Mill Products

Base price cents per pound f.o.b. mill, except where otherwise specified

Copper and brass product prices are based on 13.00c, delivered Connecticut, for copper

SHEETS	
Yellow brass (high)	19.75
Copper, hot rolled	22.75
Red brass (low) 80% cu.	21.12½
Best spring, drawing, spinning brass	22.50
Nickel silver, grade A, 18%	31.00
Lead, full sheets (cut ½c more)	9.25
Zinc sheet (100-pound base)	10.00
TUBES AND PIPES	
Seamless yellow brass (high)	24.75
Seamless copper	25.00
Seamless com. bronze, 90%	26.62½
Plumbing, I. P. sizes, yellow	23.75
Brazed brass, 75% cu.	27.25
RODS	
Yellow brass (high, full turnings)	18.00
Naval brass	20.87½
Com. bronze, 90%	22.62½
SHAPES	
Brass angles and channels	27.75
Com. bronze angles, channels	39.87½
ANODES	
Copper, in ovals	19.25
WIRE	
Yellow brass (high)	20.25

Old Metals

Dealers' buying prices, cents per pound

HEAVY RED BRASS	
New York	7.50 to 7.75
Chicago	8.00 to 8.50
Cleveland	8.50 to 9.00
St. Louis	7.50 to 8.00
HEAVY YELLOW BRASS	
Cleveland	5.75 to 6.00
HEAVY COPPER AND WIRE	
New York	9.00 to 9.50
Boston	9.50 to 10.00
Chicago	9.50 to 10.00
Cleveland	9.50 to 10.00
St. Louis	8.00 to 8.50
RED BRASS BORINGS	
New York	7.00 to 7.50
YELLOW BRASS TUBING	
Cleveland	5.75 to 6.00
LIGHT COPPER	
New York	7.50 to 8.00
Chicago	8.00 to 8.50
Cleveland	8.50 to 9.00
St. Louis	7.50 to 7.75
LIGHT BRASS	
Boston	4.50 to 4.75
Chicago	4.50 to 5.00
Cleveland	4.25 to 4.50
St. Louis	4.25 to 4.50
ZINC	
New York	2.00 to 2.50
Cleveland	2.00 to 2.25
St. Louis	2.00
ALUMINUM	
Clippings, soft, Cleveland	11.00 to 12.00
Clippings, hard, Cleveland	9.00 to 10.00
Borings, Cleveland	5.50 to 6.00
Cast, Cleveland	7.75 to 8.00
Cast, Boston	8.00 to 8.50
Cast, St. Louis	8.00

Secondary Metals

Remelt aluminum No. 12	15.50
Brass ingot, 85-5-5-5	11.75 to 12.00

Coke By-Products

Toluol Is Reduced 5 Cents—Demand for Phenol Is Light

New York, June 10.—Toluol prices are lower, a reduction of 5 cents pulling down shipments to 30c a gallon in tank lots. Drums are now 35c. This reduction follows that on benzol several weeks ago when a reduction to 21c per gallon in tanks was announced. For some time toluol demand has been spotty, with shading on attractive lots. Commercial xylol and solvent naphtha are unchanged at 28c in tank lots. Practically all business in distillates is against contracts. What spot business is noted is for small lots. Volume continues below last year, although second quarter totals will probably be larger than the first. Demand for phenol is light. Several consuming industries are not active. Production holds relatively high. Shipments of naphthalene hold steady at unchanged prices. Some shading is reported in sulphate of ammonia, but after a late start business has held fairly well.

Coke By-Products

Per Gallon at Producers' Plants in Tank Lots

	Spot
Pure benzol	$0.21
90 per cent benzol	0.21
Toluol	0.30
Solvent naphtha	0.28
Commercial xylol	0.28
Per Pound at Producers' Plants in 250-Pound Drums	
Phenol	0.16 to 0.17
Per Pound at Producers' Plants	
Naphthalene flakes	0.04½ to 0.05½
Naphthalene balls	0.05½ to 0.06½
Per 100 Pounds Delivered	
Sulphate of ammonia	$2.10 to $2.20

Warehouse

Quarter's Sales Behind Last Year and Warehouses Drift Featureless—Wire Products Irregular—Building Industry Bright Spot

WITH June's volumes holding the quietness of the past few months, the feeling is current that the midsummer lull is near and more slackening in demand is due. Quick shipment is usually asked, and aside from building activity, which is slight, the situation is dull.

New York—While far from brisk, demand is slightly improved. One factor is the light rate of consumer operations in some lines, which has resulted in small takings.

Philadelphia—While mills report a better volume of business, iron and steel jobbers report a further slight falling off in orders. Prices, however, continue firm and unchanged.

Buffalo—Warehouse business, like that of other steel lines, is somewhat featureless. Improved building conditions and more public works contracts are stimulating demand to some extent but quarter sales continue to be behind those of last year.

Pittsburgh—Business has tapered and is off slightly from the volume of a month ago. Prices on cold-rolled bars have been reduced 25 cents per 100 pounds by some interests.

Cleveland—Local jobbers are finding it increasingly difficult to move material. Ordering is still restricted to small lots exclusively. The recent cut in cold-rolled prices failed to make any lasting impression on the generally restricted buying in that line.

Detroit—June volume is fairly satisfactory, however, with the feeling that forthcoming slackening in the automobile business will cause additional unrest during July and August. Automotive parts makers are slack, but refrigerator and implement manufacturers are on good production. Prices are unchanged.

Chicago—Sales are characterized by demand for quick shipment. The volume is showing no increase. A fair amount of hot-rolled bar business is reported, and plates from miscellaneous sources are in moderate demand. Prices for common wire products, including nails, remain irregular.

Cincinnati—A sluggish market continues but sales so far this month indicate a better tonnage than in May.

St. Louis—Aside from moderate betterment in the building industry outlet, the iron and steel warehouse situation holds to the last few months' quietness. Railroads and automotives buy sparingly. Oil country goods move in fair volume. Heavier sales of structural shapes are reported. Wire continues slow, with prices weak.

Warehouse Quotations in Cents Per Pound at Leading Market Centers

Hot Mill Products Subject to New Quantity Differentials Adopted March 3, 400 to 3999 Pounds Being Base

STEEL BARS

Baltimore	3.00c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Cleveland	3.00c
Detroit	3.00c
Houston	3.00c
Los Angeles	3.30c
New York††	3.25c
Philadelphia	2.80c
Pittsburgh	2.90c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.15c
St. Paul	3.25c
Tulsa	3.65c

IRON BARS

Baltimore	3.25c
Boston	3.265c
Buffalo	3.30c
Chattanooga	3.25c
Chicago	3.00c
Cincinnati	3.30c
Detroit	3.00c
New York††	3.25c
Philadelphia	2.80c
St. Louis	3.15c
Tulsa	3.65c

REINFORCING BARS

Baltimore	2.50c to 3.31c
Boston	2.665c
Buffalo	2.95c
Chattanooga	3.25c
Cincinnati	3.30c
Cleveland	2.25c to 2.44c
Detroit	2.30c to 3.00c
Houston	3.00c
Los Angeles cl.	2.40c
Los Angeles lcl.	2.70c
New York	2.65c to 3.10c
Philadelphia	2.50c to 3.00c
Pittsburgh	2.75c
San Francisco cl.	2.30c
San Francisco lcl.	2.60c
Seattle	3.00c
St. Louis	3.15c
Tulsa	3.65c
Youngstown	2.30c to 2.60c

STRUCTURAL SHAPES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland	3.00c
Detroit	3.10c
Houston	3.25c
Los Angeles	3.30c
New York	3.30c
Philadelphia	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c

PLATES

Baltimore	3.00c
Boston	3.365c
Buffalo	3.40c
Chattanooga	3.35c
Chicago	3.10c
Cincinnati	3.40c
Cleveland ¼ in. and thicker	3.00c
Cleve., 3/16-in.	3.20c
Detroit	3.10c
Detroit, 3/16-in.	3.10c
Houston	3.00c
Los Angeles	3.30c
New York	3.30c
Philadelphia	2.70c
Pittsburgh	3.00c
Portland	3.00c
San Francisco	3.40c
Seattle	3.15c
St. Louis	3.25c
St. Paul	3.35c
Tulsa	3.75c

NO. 10 BLUE ANNEALED

Baltimore	3.50c
Boston 3/16-in.	3.915c
Buffalo	3.50c
Chattanooga	3.75c
Chicago	3.35c
Cincinnati	3.45c
Cleveland	3.25c
Detroit	3.35c
Houston	3.90c
Los Angeles	3.85c
New York	3.40c to 3.50c
Portland	3.75c
Philadelphia*†	3.25c
Pittsburgh**	3.25c to 3.35c
San Francisco	3.90c
Seattle	4.00c
St. Louis	3.45c
St. Paul	3.54½c
Tulsa	3.95c

NO. 24 BLACK SHEETS

Baltimore*†	3.75c
Boston	4.85c
Buffalo	4.20c
Chicago	4.05c
Cincinnati	4.05c
Cleveland***	3.75c
Detroit	3.95c
Los Angeles	4.75c
New York	3.60c to 3.65c
Philadelphia**†	3.80c
Pittsburgh**	3.65c to 3.75c
Portland	4.90c
San Francisco	4.90c
Seattle	5.00c
St. Louis	4.25c
St. Paul	3.79c
Tulsa	4.45c

NO. 24 GALVANIZED SHEETS

Baltimore*†	4.50c
Boston	5.60c
Buffalo	4.40c to 4.60c
Chicago (local delivery)	4.60c
Chicago (outside shipment)	4.35c to 4.60c
Cincinnati	4.90c
Cleveland***	4.50c
Detroit	4.60c
Houston	5.40c
Los Angeles	5.20c
Pittsburgh**	4.30c
New York	4.25c to 4.50c
Philadelphia*†	4.25c
Pittsburgh**	4.40c
Portland	5.50c
San Francisco	5.30c
Seattle	5.50c
St. Louis	4.85c
St. Paul	4.58c
Tulsa	5.35c

BANDS

Baltimore	3.50c
Boston	4.015c to 5.00c
Buffalo	3.65c
Chattanooga	3.45c
Chicago	3.20c
Cincinnati	3.50c
Cleveland	3.25c to 3.65c
Detroit 3/16-in. and lighter	3.30c
Houston	3.65c
Los Angeles	4.30c
New York	3.75c
Philadelphia	3.30c
Pittsburgh	3.25c
Portland	4.00c
San Francisco	3.75c
Seattle	4.00c
St. Paul	3.50c
Tulsa	3.85c

HOOPS

Baltimore	3.50c
Boston	5.50c to 6.00c
Buffalo	4.05c
Chicago	3.75c
Cincinnati	4.05c
Cleveland	3.25c to 3.65c
Detroit, No. 14 and lighter	3.80c
New York	4.25c
Philadelphia	3.55c
Pittsburgh	4.25c
Seattle	5.00c
St. Paul	4.00c

COLD FINISHED STEEL

	Rounds, hexagons	Flats squares
Baltimore (c)	3.30c	(a) 3.80c
Boston	3.55c	4.05c
Buffalo	3.95c	4.45c
Chattanooga*	3.85c	4.35c(d)
Chicago	3.35c	3.85c
Cincinnati	3.80c	4.30c
Cleveland	3.40c	3.90c
Detroit	3.65c	4.15c
Los Angeles (a)	4.50c	.....
New York	3.50c	4.00c
Philadelphia*	3.40c	3.90c
Pittsburgh	3.35c	3.85c
Portland (a)	4.50c	.....
San Fran. (a)	4.25c	.....
Seattle (a)	4.75c	.....
St. Paul (a)	3.85c	.....
Tulsa	4.75c	5.14c

(a) Rounds only: (d) Squares only. *Plus quantity differentials.

COLD ROLLED STRIP

Boston, 0.100-inch 500 pounds lots	5.30c
Buffalo	5.85c
Chicago (soft) (b)	6.15c
Cincinnati	6.10c
Cleveland (b)	5.95c
Detroit	3.65c 4.15c
New York	5.05c
Philadelphia (c)	5.05c

(b) Net base, straightening, cutting, boxing 1 ton or more. (c) Plus mill, size and quantity extras.

SWEDISH IRON AND STEEL

New York duty paid

Hollow drill steel	12.50c
Iron bars, round	6.25c
Iron bars, flats and squares	6.50c

††Domestic bars. **Less than 25 sheets. *†50 or more bundles.
***Less 0.15c where more than 10 bundles are ordered at once for delivery at one time.

Pacific Coast

Northwest States Feel Some Increase in Demand —New Work Coming Out

SOMEWHAT better tonnages of iron and steel are coming out in Washington and Oregon as the season advances. Various projects are maturing and others are being advanced. Warehouse movement is practically equal to May, 1928. In California less improvement is apparent and conditions are far below those of last year. Pipe movement is slack in both areas and sales are small.

Seattle, June 4.—Sentiment in the iron and steel trade of the Pacific Northwest appears to be more hopeful. Several important projects have developed and others are rumored. Prices remain firm and pending business is of fair proportions.

Bars, Plates and Shapes

A fair aggregate of reinforcing tonnage is being placed with local mills, mostly in lots of 50 tons or less. Merchant bars are unchanged at 2.35c and reinforcing at 2.30c. Northwest Steel Rolling Mills has booked 100 tons of reinforcing for state highway work. Bids were opened today for an addition to the Lincoln high school calling for 104 tons of reinforcing. Pacific Coast Steel Corp. booked 50 tons for the hospital at Everett.

Birchfield Boiler Co. was given the award to build 10,898 feet of 42-inch steel welded pipe for a gravity pipe line at Tacoma on a bid of $91,074. This job involves 1200 tons of plates which will be supplied by the Steel corporation. The government will open bids June 9 for the Vale, Oreg., irrigation project, involving 2200 tons of plates, 125 tons of rivets and other materials. Gilmore Oil Co. plans construction of storage plants in five Oregon cities and increased tankage will be built at several cities in Washington.

Wallace Bridge & Structural Steel Co. has taken the state highway bridge across the Queets river, Jefferson county, requiring 300 tons of structurals. Chas. G. Huber, Seattle, has the general contract at $68,214. Several small fabricating jobs have been awarded this week but no important projects have developed. Interest centers in the Aurora bridge superstructure, bids June 24. J. E. Bonnell & Son, Tacoma, have the general contract for Tacoma's Lake Cushman power plant No. 2. The structural job for this plant, 367 tons, was awarded to the Star Iron Works several months ago. Mill prices are steady at 2.35c.

The jobbing business has been active this week, May showing a volume about equal to last year. Buying is largely out of stock. Price lists are unchanged. Several important construction projects give the situation a better outlook. Demand for light plates for tank and boiler work continues in good volume.

Pipe Inquiry Is Slack

Inquiry has slacked but several contracts are pending. A number of fair sized municipal water systems are proposed. Olympia, Wash., will receive bids June 12 for mains and fittings including a large quantity of 10 to 16-inch cast iron pipe. Richmond Beach, Wash., proposes a water system involving 34,000 feet of two to 12-inch pipe, after plans by H. L. Drummond.

Old Materials

The scrap market is dull, mills and foundries being stocked for practically 60 days. Prices are weaker. Steel scrap is quoted at $10 and $11, gross, at mills but buyers are particular as to grade. Cast iron is moving only in small lots as foundry activity is limited. Dealers are asking $14 for No. 1 cast but foundries report sales on an average of $12.50, net ton. There is no export demand as Japanese buyers are out of the market.

Coast Pig Iron Prices

Utah basic	$25.00 to 26.00
Utah foundry	25.00 to 26.00
*German	24.25
*Indian	25.00 to 26.00

*C.i.f. duty paid.

Office Building Is Let

San Francisco, June 7.—(*By Air Mail*)—Demand for steel products on the Pacific Coast has fallen off and few new inquiries of importance have come up for figures. Featuring the awards of the week were 1100 tons for an office building in Los Angeles, booked by McClintic-Marshall Co.

Prices are being well maintained, with little price cutting. Numerous projects involving from 250 to 1200 tons of plates and shapes are about ready to come out for figures.

Pig Iron and Coke

Foundry operations continue on a limited basis and demand for foundry pig iron and coke is confined to small lots. Specialty shops are operating on fairly full schedules. No change in quotations has occurred recently.

Bars, Shapes and Plates

Awards of reinforcing steel bars totaled 854 tons and brought the aggregate for the year to 21,043 tons as compared with 35,045 tons for the corresponding period last year. Included among the larger lettings were 250 tons for a street improvement project at Claremont, Calif., and 200 tons for the addition to an office building in Los Angeles. Pending business includes 350 tons for a hospital at Palo Alto, Calif., and 3000 tons for a hotel addition in Pasadena. Out-of-stock prices in the San Francisco district continue unchanged at 2.30c, base, on carload lots. Los Angeles prices are $2 a ton higher.

Plate awards this week were all confined to lots of less than 100 tons. Prices are now firm at 2.25c, c.i.f.

Shape awards aggregated 1630 tons and brought the total for the year to 41,992 tons, compared with 97,493 tons for the same period a year ago. The Consolidated Steel Corp. has booked 450 tons for a telephone building in Long Beach. Bids were opened this week on 615 tons for a bridge over the Salinas River for California and on 566 tons for a bridge over the same river for Monterey county. Plain shapes remain firm at 2.35c, c.i.f.

Other Finished Material

Lettings of cast iron pipe were in lots of less than 100 tons. Fullerton, Calif., opened bids this week on 110 tons of 4 to 8 inch-pipe. San Francisco is in the market for 265 tons of 12 and 16-inch class B pipe. Bids will be opened next week on 384 tons for San Diego. Movement of standard steel pipe is restricted to unimportant lots.

Gains and Reductions in April Employment

Washington, June 10.—Iron and steel, cast iron pipe and structural ironwork plants showed an increase in employment and payrolls in April compared with March. Other branches of the general iron and steel industry reported decreases, according to the bureau of labor statistics.

Two hundred and two iron and steel manufacturing plants reported their March employment as 266,610, increasing in April to 268,008, or 0.5 per cent. Their payrolls mounted from $8,423,134 to $8,536,492, a gain of 1.3 per cent.

Thirty-eight cast iron pipe plants reported their March employment as 10,925, increasing in April to 11,207, or by 2.6 per cent. Their payrolls advanced from $259,702 to $271,625, or 4.6 per cent.

Reports from 173 structural ironwork plants gave their March employment as 28,126, increasing in April to 28,464. Their payrolls rose from $832,224 to $866,197. One hundred and fifty-five machine tool plants reported March employment as 36,313, decreasing in April to 35,805, or 3.4 per cent. Their payrolls dropped from $1,110,026 to $1,049,127.

Properly etched with strong acid to lay the fibers bare, wrought iron reveals a "grain" like wood which may be seen without a microscope.

Iron Ore

Estimates of Season Shipments Revised Downward

IRON ORE PRICES, PAGE 84

Cleveland, June 10.—The market for Lake Superior iron ore is quiet, consumers generally having covered requirements. Some of the large producers do not expect to bring down as much ore this season as they estimated a month ago. If no further revisions occur total shipments will be approximately 53,000,000 tons. The Lake Superior Iron Ore association reports receipts at and shipments from Lake Erie ports, and dock balances as of June 1 as follows:

	Receipts	Shipments	Dock balance June 1, 1930
Buffalo	381,453	49,264	1,724
Erie	90,886	149,619	64,648
Conneaut	978,823	1,319,468	1,244,023
Ashtabula	694,077	975,216	1,238,031
Fairport	217,107	282,292	283,513
Cleveland	901,067	766,092	952,710
Lorain	335,031	146,427	118,695
Huron	208,883	247,074	321,796
Toledo	189,931	138,776	27,650
Total	3,997,258	4,074,228	4,252,790
Comparative 1 year ago	7,944,349	6,730,494	3,871,191

Receipts to June 1 at other ports follow:

	Receipts
Detroit	97,357
Indiana Harbor	372,303
Gary	617,493
South Chicago	964,766
Sault Ste. Marie, Ont.	9,445
Point Edward, Ont.	38,641
Total	2,100,005
Comparative 1 year ago	2,913,557

New York, June 10.—While producers of foreign manganiferous ore are well sold ahead as a result of heavy contracting last year more material has become available due in part to a temporary ban on shipments by some of the European steelworks. Offers have been made at lower prices. Manganiferous, 45 to 55 per cent iron and 6 to 10 per cent manganese, is now holding at 10.50c to 11c, per unit, alongside docks at Atlantic ports. This compares with a previous range of 11c to 11.50c.

Spanish and North African basic iron ore 50 to 60 per cent, is 9.50c to 10.25c. Newfoundland foundry, 55 per cent, is nominally unchanged at 9c, per unit, alongside docks. Swedish basic, 65 per cent is 9.50c to 10.50c, and Swedish low phosphorus is 11c. The Swedish situation is watched closely as the miners' wage agreement comes up for renewal at the end of this month.

Manganese ore prices in general are steady, Caucasian, 52 to 55 per cent, and Indian, 48 to 50 per cent, are holding at 30c. Brazilian, 46 to 48 per cent, is 28c. Some sales of South African manganese have been made here recently but the amount and price are not disclosed.

Pig Iron

(*Concluded from Page* 85)

slower than recently. Furnace interests expect to open books this week for third quarter. The price for delivery in the district is $14, base, Birmingham, with lower figures applying for delivery to outside competitive points.

Philadelphia, June 10.—The market for pig iron is quiet, orders being restricted to small and moderate size lots generally for quick shipment. Foundry operations do not appear to have improved. A few minor sales of southern iron are noted. Prices are unchanged.

Youngstown, O., June 10.—Small sales of foundry, malleable and standard low phosphorus pig iron continue to be made for immediate shipment. Prices are unchanged at $18.50 for No. 2 foundry, $19 for malleable, and $27 for low phosphorus, valley furnaces. In adjacent territory competition from outside furnaces is keen, resulting in concessions being made occasionally.

Toronto, Ont., June 10.—More inquiries have come out for third quarter but few melters have placed contracts. Sellers expect a smaller volume of business for the next three months than in either the first or second quarters. The daily rate of the melt holds at about 75 per cent. Spot sales in the past week improved moderately over the previous week. Prices are unchanged.

The Philadelphia chapter of the American Welding society recently re-elected all officers for the year 1930-31 with the exception of the treasurer. The former treasurer vacated the post because of pressure of other business.

Line Pipe Awards Exceed 500,000 Tons; Plants Booked Into Winter

PITTSBURGH, June 10.—Line pipe awards have been announced frequently during the past four to eight weeks and these and supplementary tonnages have been sufficient to provide a substantial volume of unfilled business on books of the producers of the larger sizes of lapwelded and seamless pipe. Some confusion has arisen, however, through reports of tonnages that duplicated previous awards. Major awards have involved between 500,000 and 550,000 tons of pipe. Only a small portion of this tonnage has been shipped and actual production on considerable of the remainder necessarily must be deferred for some time.

The Texas to Chicago line, involving 935 miles of 24-inch pipe, will take nearly 200,000 tons and a parallel line is scheduled to be placed next year. A. O. Smith Co. and National Tube Co. are expected to furnish the main line and according to the best information the second line has not been awarded. Missouri-Kansas Pipe Line Co. awarded the National Tube Co. 150,000 to 200,000 tons of seamless pipe for a line scheduled to be laid down from the Texas Panhandle to North Central states. Phillips Petroleum Co.'s gasoline line, taking 50,000 tons, went to Republic Steel Corp.

The Southern Natural Gas Co. placed a similar tonnage of 4 to 16-inch pipe with National Tube Co. and 18,000 tons with A. O. Smith Corp. Another 18,000-ton order, placed by Southwestern Natural Gas Co., was divided between Smith and National Supply Co., with Jones & Laughlin Steel Corp. sharing in the latter's order. A gasoline line for Sun Oil Co., requiring 25,000 tons, will be furnished by Jones & Laughlin and National Tube companies.

With National Tube Co. just completing its facilities to produce seamless and electrically welded pipe of 24-inch diameter, and A. O. Smith Corp. and Spang, Chalfant & Co. the only other producers making fire or electrically welded pipe in the 24-inch size, there has been a large influx of orders in a short space to insure fairly early deliveries. In addition, business has been heavy in smaller orders for various diameters of lapweld pipe and this overflow tonnage, of necessity, has been diverted to pipe producers who do not make the 20 to 24-inch sizes. On sizes of lapweld pipe 8 inch and larger pipe mills, consequently, are well booked as far as four and five months.

On lapweld and seamless National Tube is booked through to the end of the year, and Youngstown Sheet & Tube, and Republic Steel to Nov. 1. Jones & Laughlin is filled up on lapweld until well along in the fall. This situation is in contrast with that in buttweld pipe which has been exceptionally slow in keeping with quiet building operations. Orders to mills for this material do not permit buttweld operations to rise much above 40 to 50 per cent.

Other pipe lines not formally announced are thought to have been tentatively placed in order to insure delivery. These include such projects as the Barnsdall Corp.'s 800-mile line from Muskogee, Okla., to Milwaukee, one for the Columbia Gas Corp. from eastern Kentucky to the Atlantic coast, and the 300-mile twin line for the Standard Oil Co. of New Jersey from Tulsa to St. Louis.

Steel & Wire to Operate Morris & Bailey Unit

New York, June 10.—United States Steel Corp. officials, having completed acquisition of the Morris & Bailey division of the Oliver Iron & Steel Co., at Wilson Station, Pa., announce that the acquired unit will be operated by the American Steel & Wire Co., a Steel corporation subsidiary. It is reported that the acquisition was made to protect the Corporation's right of way for gas and transmission lines it has across the Morris & Bailey property. The latter company produces cold-drawn bar, strip and vanadium alloy steel in those forms.

Complete Gulf Mills

Birmingham, Ala., June 10.—Gulf States Steel Co. announces progress on its program of development for its plant at Gadsden, Ala., where a new universal plate mill will be started June 16 and a new plate mill to be in production early in July. One of the open-hearth furnaces has been enlarged from 75 to 90-tons capacity, a second almost rebuilt, and four other steelmaking furnaces will be increased in capacity later. Contracts on material for all improvements were let several weeks ago and deliveries are now being completed.

Renew Wage Agreements With Few Changes

Atlantic City, N. J., June 10.—Wage agreements have been reaffirmed with few changes by the Western Bar Iron association and the Amalgamated Association of Iron, Steel and Tin Workers, and also by the Western Sheet and Tin Plate Manufacturers' association and the Amalgamated. The Bar Iron association agreement was approved here June 6, the only change from last year's schedule being the elimination of the guaranteed minimum rate. A guarantee has been in effect in the past two years, protecting workers against a drop in the card rate, or average selling price, below 1.90c per pound. The full range of the sliding scale will be restored, effective June 30. Actual average sales price for May and June will then be announced.

Earlier in the week the Sheet and Tin Plate Manufacturers' association renewed its agreement for the year beginning June 30. Wage scales are unchanged and the slight modifications made in the text of the agreement deal with working conditions of minor importance. Difficulties over the pack furnace did not arise, and the Amalgamated yielded on its demand for a six-hour day.

Mechanical Engineers in Detroit Meeting

Detroit, June 10.—Several hundred leaders in various fields of mechanical engineering are attending the semi-annual meeting of the American Society of Mechanical Engineers which opened here yesterday at the Book-Cadillac hotel. The meeting will continue through Thursday with group sessions on machine shop practice, properties of metals, applied mechanics, power test codes, industrial power, fuels and power, management, mechanical springs and other subjects.

Paul Doty, chairman of the Minnesota State Board of Registration, St. Paul, Minn., and vice president of the society, presided at a business session on Monday afternoon at which consideration was given to a proposed amendment to the constitution on initiation fees. An extensive program of inspection trips has been arranged to include a large group of leading industries in the Detroit district.

M. E. Cooley, dean of engineering, University of Michigan, Ann Arbor, Mich., and past president of the society, presented an address of welcome at an informal reception on Monday evening. The semi-annual banquet this year will be replaced with a boat trip up the Detroit river to Port Huron on Wednesday afternoon.

Sets New Scrap Rates

Washington, June 10.—The interstate commerce commission in a proposed finding prepared for the commission by F. A. Clifford, an examiner, has modified a former finding, following further hearing, in which it was held that the rates on scrap iron and steel, in carloads, from points in central and western trrunk line territories to Kokomo, Ind., were unreasonable. Reasonable rates have been prescribed for the future in the proposed new decision.

Supreme Court Decision Paves Way for Protests on New Freight Rates

CLEVELAND, June 10.—Traffic departments of steel companies in the Middle West are studying the railroad freight rate situation that has developed through a decision handed down June 2 by the United States Supreme Court. The decision, in a California deciduous fruit case, set aside the interpretation by the interstate commerce commission of the Hoch-Smith congressional resolution out of which grew Docket 17,000. The portion of this docket known as part 6 pertains to freight rates on a long list of iron and steel articles in central freight association, Eastern and New England territories.

The commission ordered the carriers to put in effect a new schedule which went into operation throughout the territories May 20. The Supreme Court decision now declares:

"Our conclusion is that the order of the commission was based upon an erroneous construction of the joint (Hoch-Smith) resolution, and therefore should have been set aside by the court below. Decree reversed."

All through five hearings in the spring of 1927 the commission's representative, Johnston B. Campbell, insisted that iron and steel should bear a greater portion of the revenue to aid in reducing rates on agricultural products and supplies to the farmer. The recent Supreme Court decision holds that such an interpretation of the resolution is discrimination and tends to destroy or change radically the basic rules of rate making.

How to proceed to modify or set aside the new mileage rates is being considered by steelworks traffic managers. They are not acting in unison. Certain districts such as Middletown, O., and southern Michigan have been benefitted by the new rates. Some, like the Chicago district, have been helped in a few directions and hindered in others. Still others, like the eastern district, find themselves about evenly divided. The Pittsburgh-Youngstown-Cleveland short haul district finds itself greatly handicapped in short hauls, but gains on long hauls.

Further complications occur through complaints filed with the Illinois and Indiana public service commission by Chicago shippers against intrastate operation of the rates. Pittsburgh shippers have protested to the Pennsylvania public service commission against higher short haul rates. Their protest will be heard at Pittsburgh, June 16.

Here and There in Industry

Timely Information Which Records Developments in Various Lines of Productive Enterprise

MUSKEGON MOTOR SPECIALTIES CO., Muskegon, Mich., and the Jackson Motor Shaft Co., Jackson, Mich., have been combined under the name of the former. Otto H. Schultz, president of the Jackson company, has been made vice president and director of the consolidation and Charles Heuman, secretary and treasurer of the Jackson company, has been made assistant secretary and treasurer and a director of the Muskegon company. Officers now are as follows: Fred L. Flanders, chairman of the board and treasurer; Lawrence O. Gordon, president and director; Otto H. Schultz, vice-president and director; Wilson McLaughlin, vice-president; Harris E. Galpin, secretary, counsel and director; Charles Heuman, assistant secretary, assistant treasurer and director; James Albers, assistant secretary and assistant treasurer; Paul T. Bollinger, Leon C. Murdock, Frank W. Shaw and Franklin B. Evans, directors.

* * *

CRAWFORD OVEN CO., New Haven, Conn., is building a new office and factory at 200 Shelton avenue. The first unit is a concrete, brick and steel one-story plant.

* * *

STEPHENS-ADAMSON MFG. CO., Aurora, Ill., manufacturer of elevating and conveying machinery, has moved its New York office to room 1360 at 50 Church street.

* * *

PENNSYLVANIA PUMP & COMPRESSOR CO., Easton, Pa., has appointed E. H. Bollenbacher, 725 Forsyth building, Atlanta, Ga., its representative in the Southeast.

* * *

AMES SHOVEL WORKS, Anderson, Ind., is operating full time with a large force. Production is heavy in the new temporary assembly plant. Rapid progress is being made on the new assembly department building. The old building was destroyed by fire some time ago.

* * *

L. S. WATSON MFG. CO., Leicester, Mass., and J. H. Williams Co., Millbury, Mass., have merged under the name Watson-Williams Mfg. Co. The company will continue the manufacture of textile specialties, shuttles, heddles and card frames. The Williams company was formed 100 years ago and the Watson company in 1842.

* * *

PULVERIZED FUEL EQUIPMENT CO., Builders building, Chicago, a division of the Borg-Warner Corp., has appointed several sales representatives in preparation for marketing its powdered coal systems. Among these representatives are E. L. Sullivan. Oliver building, Pittsburgh, and H. P. Rogers & Co., Leader building Cleveland.

* * *

ALLIED ENGINEERING & MFG. CO., 89 Murray street, Newark, N. J., recently established for the manufacture of dies and tools and automotive parts, has occupied a plant with 6500 square feet of floor space at that number. Equipment has been installed, including drills, shapers, lathes, grinders, drills, milling machines, and automatic presses. The company has established a laboratory and is perfected a composition for the manufacture of match plate patterns. J. Zelder is president, A. L. Voight, vice president, E. Y. Rappaport, secretary-treasurer.

* * *

HILL-CHASE & CO. INC., with headquarters and warehouse at Richmond and Ontario streets, Philadelphia, has been appointed Philadelphia representative and distributor of the Globe Steel Tube Co., Milwaukee, and now are carrying a complete stock of cold drawn seamless steel tubing made by that company. Hill-Chase & Co. Inc. carries a stock of more than 1,000,000 pounds of full finished sheets and stocks of cold-finished steel bars made by the Wyckoff Drawn Steel Co., cold-rolled strip steel made by the Stanley Works, Swedish and domestic spring steels made by the Athenia Steel Co., and tool steels made by the Simonds Saw & Steel Co.

* * *

HK. FERGUSON CO., Cleveland, engineer, has acquired the business, assets and good will of Warren D. Spengler Inc., Cleveland, consulting power plant engineer. The entire Spengler organization will be taken over by the Ferguson company. Spengler services have been in demand by large utility and industrial concerns seeking greater economy in operation of their power plants. The firm was composed of Warren D. Spengler, who founded it 11 years ago, Ralph A. Spengler and Harold H. Spengler, brothers, who joined later. The Ferguson company recently also acquired the Devore Co., Toledo, specialist in design of paper mills and glass plants.

* * *

JOSEPH GREENSPON'S SONS IRON & STEEL CO., St. Louis, has opened a branch office at Dallas, Tex., in charge of C. C. Hurlburt, formerly of the Tulsa office.

* * *

NEWPORT ROLLING MILL CO., Newport, Ky., has moved its offices at Madison, Wis., from room 1003, Majestic building to 617 Power and Light building. C. M. Easterly is the company's representative at Madison.

* * *

EX-CELL-O-AIRCRAFT & TOOL CORP., Detroit, has opened a district sales office in room 312 Cook building, 4614 Prospect avenue, Cleveland. It is in charge of Frank V. Strother, who has been in the company's Detroit organization.

* * *

REINKE-SCHOMANN INC. is the name of a new Milwaukee concern organized to manufacture general sheet metal products. Offices and shop have been established at 949 North Water street. Fred Schomann is president, and Herman Reinke secretary and treasurer.

* * *

OLIVER IRON MINING CO., Duluth, has acquired the old Union hospital at Ironwood, Mich., and will remodel it for general offices. The main unit is 75 x 80 feet, 3-story, and there are two 3-story wings, each 25 x 30 feet. About $35,000 will be spent in reconditioning structures and equipment.

* * *

PACIFIC H. B. A. STEEL CO. INC. is the new name by which the amalgamated firms of Hickok & Hickok, Portland and San Francisco,

(*Concluded on Page* 109)

Record Steel Output in 1929

PRODUCTION OF STEEL INGOTS AND CASTINGS BY PROCESSES.

Years.	Open-hearth. Basic.	Open-hearth. Acid.	Open-hearth. Total.	Bessemer.	Crucible.	Electric.	Miscellaneous	Total. Gross tons.
1915	22,308,725	1,370,377	23,679,102	8,287,213	113,782	69,412	1,527	32,151,036
1916	29,616,658	1,798,769	31,415,427	11,059,039	129,692	168,918	604	42,773,680
1917	42,087,507	2,061,386	44,148,893	10,479,960	126,716	304,543	495	45,060,607
1918	32,476,571	1,982,820	34,459,391	9,376,238	115,112	511,364	329	44,462,432
1919	25,719,312	1,229,382	26,948,694	7,271,562	63,572	484,452	2,952	34,671,232
1920	31,375,723	1,296,172	32,671,895	8,883,087	72,265	502,152	3,535	42,132,934
1921	15,082,564	507,238	15,589,802	4,015,968	7,613	169,499	945	19,783,797
1922	28,387,171	921,812	29,308,983	5,919,298	28,606	346,039	....	35,602,926
1923	34,665,021	1,234,636	35,899,657	8,484,088	44,079	515,872	...	44,943,696
1924	30,719,523	857,827	31,577,350	5,899,590	22,473	432,526	....	37,931,939
1925	47,087,342	947,146	48,034,488	6,723,962	19,562	615,512	....	45,393,524
1926	39,653,315	1,038,664	40,691,979	6,934,568	15,493	651,723	....	48,293,763
1927	37,144,268	924,067	38,068,335	6,191,727	9,036	666,087	....	44,935,185
1928	43,200,483	913,473	44,113,956	6,620,195	7,769	802,260	....	51,544,180
1929	47,232,419	1,120,469	48,352,888	7,124,075	5,079	951,431	....	56,433,473

PRODUCTION OF STEEL CASTINGS.

1915	333,103	402,220	735,332	92,476	14,756	23,061	1,196	866,824
1916	605,412	570,937	1,176,449	142,791	9,351	42,870	302	1,371,763
1917	558,568	654,568	1,213,156	159,272	3,834	64,911	234	1,441,407
1918	505,880	634,950	1,140,830	160,844	1,330	108,296	110	1,411,410
1919	313,965	448,555	762,520	98,819	1,009	111,510	2,579	976,437
1920	449,330	537,070	986,400	104,980	1,729	155,196	3,237	1,251,542
1921	217,957	216,488	434,445	28,809	736	85,095	828	550,713
1922	425,981	404,767	830,748	47,733	1,045	154,982	....	1,034,508
1923	571,310	581,299	1,152,609	67,512	1,952	235,958	...	1,458,031
1924	456,518	402,901	859,419	53,437	1,377	206,549	....	1,120,782
1925	455,282	462,303	917,585	53,834	1,833	279,534	....	1,252,786
1926	480,627	505,379	986,006	43,066	2,041	326,445	....	1,357,558
1927	393,881	430,414	824,295	38,024	1,340	294,809	....	1,158,468
1928	381,926	458,590	840,516	28,450	1,253	348,568	....	1,218,787
1929	588,213	544,076	1,132,289	30,829	883	419,039	....	1,583,040

PRODUCTION OF ALLOY STEEL INGOTS AND CASTINGS.

Years.	Ingots.	Castings.	Total.	Years.	Ingots.	Castings.	Total.
1916	1,306,157	56,458	1,362,615	1923	2,014,269	92,220	2,106,489
1917	1,576,806	67,529	1,644,335	1924	1,940,461	85,948	2,026,409
1918	1,721,367	66,485	1,787,852	1925	2,320,390	112,553	2,432,973
1919	1,435,816	45,372	1,481,188	1926	2,317,313	146,101	2,463,414
1920	1,591,939	68,353	1,660,292	1927	2,385,904	145,844	2,531,748
1921	769,293	40,255	809,548	1928	3,045,225	169,684	3,214,909
1922	1,614,392	59,104	1,673,496	1929	3,764,287	192,920	3,957,207

Similar statistics are not available prior to 1909

PRODUCTION OF ALLOY STEEL INGOTS AND CASTINGS BY PROCESSES, GROSS TONS, 1928–1929.

Processes.	1929—Gross tons. Ingots.	Castings.	Total.	Total, 1928.
Open-hearth steel—basic	3,198,079	42,451	3,240,530	2,609,822
Open-hearth steel—acid	57,833	50,174	108,007	103,683
Bessemer steel	90,089	6,223	96,312	66,016
Crucible steel	2,323	5	2,328	2,290
Electric steel	415,963	94,067	510,030	433,096
Total—Gross tons	3,764,287	192,920	3,957,207	3,214,909

In 1929 there were 196 works in 30 States, the District of Columbia and Alaska which made alloy steel ingots or castings.

TOTAL PRODUCTION OF ALL KINDS OF FINISHED ROLLED IRON AND STEEL, GROSS TONS, 1887–1929.*

Years.	Iron and steel rails.	Plates and sheets.	Wire rods.	Structural shapes.	Nail plate.	All other finished rolled.	Total Gross tons.
1887	2,139,640	809,355	... ...	.....	308,432	2,184,279	5,235,706
1888	1,403,700	609,827	279,766	.....	289,891	2,034,162	4,617,349
1889	1,522,204	716,496	363,851	.....	259,409	2,374,968	5,236,928
1890	1,885,307	809,981	457,099	.....	251,828	2,618,660	6,022,875
1891	1,307,170	678,927	536,607	.....	223,312	2,644,941	5,390,963
1892	1,351,844	751,460	627,829	453,957	201,242	2,579,482	6,165,814
1893	1,136,458	674,345	537,272	387,307	136,113	2,104,190	4,975,685
1894	1,021,772	682,900	673,402	360,305	108,262	1,793,570	4,642,211
1895	1,306,135	991,459	791,130	517,920	93,085	2,487,845	6,189,574
1896	1,122,010	965,776	623,986	493,571	72,137	2,236,361	5,515,841
1897	1,647,892	1,207,286	970,736	583,790	94,054	2,497,970	7,001,728
1898	1,981,241	1,448,301	1,071,683	702,197	70,188	3,239,760	8,513,370
1899	2,272,700	1,903,565	1,036,398	850,376	83,015	4,146,425	10,294,419
1900	2,385,682	1,794,528	846,291	815,161	70,245	3,575,536	9,487,443
1901	2,874,639	2,254,425	1,365,944	1,013,150	68,850	4,772,329	12,349,327
1902	2,947,933	2,665,409	1,574,293	1,300,326	72,936	5,383,219	13,944,116
1903	2,992,477	2,599,665	1,503,455	1,095,813	64,102	4,952,185	13,207,697
1904	2,284,711	2,421,398	1,699,028	949,146	61,601	4,597,497	12,013,381
1905	3,375,929	3,832,230	1,808,688	1,660,519	64,542	6,398,107	16,840,015
1906	3,977,887	4,182,156	1,871,614	2,118,772	54,211	7,383,828	19,588,468
1907	3,633,654	4,248,832	2,017,583	1,940,332	52,027	7,972,374	19,864,822
1908	1,921,015	2,649,693	1,816,949	1,082,181	45,747	4,311,608	11,828,193
1909	3,023,845	4,234,346	2,335,685	2,273,562	63,746	7,711,506	19,644,690
1910	3,636,031	4,955,484	2,241,830	2,266,890	45,294	8,475,750	21,621,279
1911	2,822,790	4,488,049	2,450,453	1,912,367	48,522	7,316,990	19,039,171
1912	3,327,915	5,875,080	2,653,553	2,846,487	45,331	9,908,475	24,656,841
1913	3,502,780	5,731,037	2,464,807	3,004,972	37,503	10,030,144	24,791,243
1914	1,945,095	4,719,246	2,431,714	2,031,124	38,573	7,204,444	18,370,196
1915	2,204,203	6,077,694	3,095,907	2,437,003	31,929	10,546,188	24,392,924
1916	2,854,518	7,453,980	3,518,746	3,029,964	30,088	15,493,093	32,380,389
1917	2,944,161	8,267,616	3,137,138	3,110,000	22,864	15,585,921	33,067,700
1918	2,540,802	8,799,135	2,562,390	2,849,969	18,310	14,385,038	31,155,754
1919	2,203,843	7,372,814	2,538,476	2,614,036	12,832	10,359,543	25,101,544
1920	2,604,116	9,337,680	3,136,907	3,306,748	20,577	13,941,835	32,347,863
1921	2,178,818	4,260,574	1,564,330	1,272,624	14,573	5,483,087	14,774,006
1922	2,171,776	7,968,397	2,654,741	2,718,768	21,909	10,916,353	26,452,004
1923	2,904,516	9,497,717	3,075,892	3,405,197	22,833	14,370,921	33,277,076
1924	2,433,332	8,087,883	2,522,545	3,283,708	22,175	11,736,792	28,086,435
1925	2,785,257	9,807,659	2,844,656	3,604,130	22,038	14,323,220	33,386,960
1926	3,217,649	10,529,056	2,722,032	3,911,603	17,337	15,098,155	35,495,892
1927	2,806,486	9,627,734	2,770,271	3,742,445	18,051	13,914,044	32,879,031
1928	2,647,493	11,006,050	3,080,816	4,096,143	16,200	16,816,214	37,662,916
1929	2,722,138	12,436,312	3,134,409	4,778,020	9,827	17,988,710	41,069,416

* Prior to 1887 complete statistics of the production of all forms of finished rolled iron and steel are not available.

Final Statistics of American Iron and Steel Institute Show Gain in Ingots and Castings of 9.47 Per Cent—Finished Steel Increases 9.05 Per Cent

STEEL ingots and castings produced in the United States in 1929 again set a high mark for all time with a total of 56,433,473 tons. In 1928 the alltime record had been broken by a figure of 51,544,180 tons. The 1929 production exceeded that of 1928 by 9.47 per cent. These figures are from the final computations of the American Iron and Steel institute and constitute the official record for the industry.

Separating figures for ingots and castings, the former aggregated 54,850,433 tons, compared with 50,325,393 tons in 1928, and steel castings totaled 1,583,040 tons, compared with 1,218,787 tons in 1928. The gain in ingots was 9 per cent and in castings 29.9 per cent. Both these totals for 1929 exceeded all previous figures. A reason for the unusual increase in steel castings over the previous year is found in the fact that the total in this item in 1928 was unusually low, being below that for several preceding years. In 1929 steel castings regained top place with a large margin over any preceding year.

Included in the 47,232,419 tons of basic open-hearth steel ingots and castings produced in 1929 are 2,961,292 tons of duplex steel ingots and castings, which were made from metal partly purified in bessemer converters and finally purified in basic open-hearth steel furnaces, compared with 2,232,197 tons, an increase of 729,095 tons, or 32.6 per cent. This is the largest sum for duplex steel since 1920 and it has been exceeded only in that year and in 1916, 1917 and 1918.

Alloy steel ingots and castings again set a new high mark with 3,957,207 tons, compared with 3,214,909 tons in 1928, which was a high mark, the increase for 1929 over 1928 being 23.1 per cent. Electric steel made 510,030 tons of this aggregate, compared with 433,096 tons in 1928.

Finished rolled iron and steel produced in 1929 was 41,069,416 tons, compared with 37,662,916 tons in 1928, a gain of 3,406,500 tons or 9.05 per cent. The total in 1928 was a new high and 1929 thus is an alltime record. Of the total finished rolled production last year 475,049 tons were of iron and 41,069,416 tons were steel. The total for iron is slightly below that of 1928 and continues the steady decline in tonnage of rolled iron products which has been in progress for many years. Of the total production in 1929 about 98.84 per cent was rolled from steel, compared with 98.71 per cent in 1928. In 1929 about 36.18 per cent of the entire output was rolled in Pennsylvania, compared with 34.70 per cent in 1928 and about 21.46 per cent in Ohio, against 22.18 per cent in 1928. In 1929 there were 325 plants in 28 states, which rolled finished forms of iron or steel, against 338 plants in 27 states and the Canal Zone, Panama, in 1928.

Increases in production of important steel items ranged from about 0.048 per cent for concrete bars to about 13 per cent for plates and sheets. Tin and terne plate showed a gain of 7 per cent; skelp, 4.41 per cent; merchant bars, 3.08 per cent; wire rods, 1.72 per cent; strip, 1.57 per cent; steel rails, 2.79 per cent.

New Marks Set in All Forms

PRODUCTION OF MERCHANT BARS, SHOWING IRON AND STEEL MERCHANT BARS SEPARATELY, GROSS TONS, 1910–1929.

Years.	Iron.	Steel.	Total.	Years.	Iron.	Steel.	Total.
1910..	1,074,163	2,711,568	3,785,731	1920.	663,032	5,467,208	6,130,240
1911..	835,625	2,211,737	3,047,362	1921.	198,324	1,367,430	1,565,754
1912..	944,790	2,752,324	3,697,114	1922.	317,665	3,660,993	3,978,658
1913..	1,026,632	2,930,977	3,957,609	1923.	404,750	5,148,066	5,552,816
1914..	563,171	1,960,460	2,523,631	1924.	258,737	4,022,184	4,280,921
1915..	657,107	3,474,135	4,131,242	1925.	290,488	5,368,827	5,659,315
1916..	993,948	5,236,354	6,230,302	1926.	252,437	5,221,399	5,473,836
1917..	983,926	5,226,031	6,209,957	1927.	187,995	4,682,252	4,870,247
1918..	846,898	5,395,851	6,242,749	1928.	165,277	6,112,558	6,277,835
1919..	446,549	3,945,075	4,391,624	1929.	154,690	6,316,456	6,471,146

PRODUCTION OF CONCRETE BARS, SHOWING IRON AND STEEL CONCRETE BARS SEPARATELY, GROSS TONS, 1914–1929.

Years.	Iron.	Steel.	Total.	Years.	Iron.	Steel.	Total.
1914.....	.....	288,471	288,471	1922.....	606	575,120	575,816
1915.....	.....	353,408	353,408	1923.....	368	680,499	680,867
1916.....	2,683	458,717	461,400	1924.....	507	655,615	656,122
1917.....	1,497	469,687	471,184	1925.....	1,195	818,392	819,587
1918.....	468	344,152	344,620	1926.....	1,649	814,180	815,829
1919.....	2,295	416,726	419,021	1927.....	2,428	813,585	816,013
1920.....	698	571,747	572,445	1928.....	462	951,426	951,888
1921.....	1,094	226,134	227,228	1929.....	537	951,793	952,350

PRODUCTION OF HEAVY AND LIGHT STRUCTURAL SHAPES, GROSS TONS, 1918–1929.

Years.	Heavy shapes.	Light shapes.	Total.	Years.	Heavy shapes.	Light shapes.	Total.
1918.	2,438,126	411,843	2,849,969	1924.	2,805,084	478,624	3,283,708
1919..	2,136,424	477,612	2,614,036	1925.	3,049,817	554,313	3,604,130
1920..	2,741,120	565,628	3,306,748	1926.	3,330,572	581,091	3,911,663
1921..	1,082,727	189,897	1,272,624	1927.	3,083,211	659,234	3,742,445
1922..	2,337,026	381,742	2,718,768	1928.	3,408,543	687,598	4,096,143
1923..	2,917,446	487,751	3,405,197	1929.	4,055,615	722,405	4,778,020

PRODUCTION OF SKELP SHOWING IRON AND STEEL SKELP SEPARATELY, GROSS TONS, 1910–1929.

Years.	Iron.	Steel.	Total.	Years.	Iron.	Steel.	Total.
1910.	350,578	1,477,616	1,828,194	1920	252,403	2,967,886	3,220,289
1911....	322,397	1,658,276	1,980,673	1921....	115,523	1,815,052	1,930,575
1912...	327,012	2,119,804	2,446,816	1922.	218,868	2,653,347	2,872,215
1913....	312,746	2,189,218	2,501,964	1923....	216,846	3,517,490	3,734,336
1914..	264,340	1,718,091	1,982,431	1924....	165,581	3,004,962	3,170,543
1915..	262,198	2,037,266	2,299,464	1925....	178,586	3,051,182	3,229,768
1916...	355,445	2,572,229	2,927,674	1926....	189,774	3,574,776	3,764,550
1917....	336,591	2,337,640	2,674,231	1927....	156,204	3,262,648	3,418,852
1918....	258,500	2,305,511	2,564,011	1928....	140,318	3,228,655	3,368,973
1919....	192,146	2,363,632	2,555,778	1929....	151,556	3,365,682	3,517,238

PRODUCTION OF SEAMLESS STEEL TUBES, GROSS TONS, 1924–1929.

Years.	Hot finished.	Cold drawn.	*Total.	Years.	Hot finished.	Cold drawn.	*Total.
1924...	131,758	129,399	261,157	1927...	725,970	138,170	* 864,140
1925....	403,965	164,225	568,190	1928...	906,032	172,895	*1,078,927
1926....	620,936	154,393	*775,329	1929...	1,097,459	206,026	*1,303,485

* Includes 174,000 tons of seamless steel boiler tubes in 1926, 157,205 tons in 1927 147,742 tons in 1928, and 176,680 tons in 1929. Figures are not available prior to 1925.

PRODUCTION OF TINPLATES AND TERNE PLATES, 1901–1929.

Years.	Tinplates.	Terne plates.	Total pounds.
1901 (calendar year).....	.....	.....	894,411,840
1902.....	.....	.....	806,400,000
1903.....	.....	.....	1,075,200,000
1904 (cen. year end. Dec. 31)....	867,526,985	158,857,866	*1,032,940,706
1905 (calendar year).....	.....	.....	1,105,440,000
1906.....	1,100,373,000	193,367,000	1,293,740,000
1907.....	996,650,000	156,447,000	1,153,097,000
1908.....	1,048,896,000	154,179,000	1,203,075,000
1909.....	1,179,858,000	190,930,000	1,370,788,000
1910.....	1,450,821,000	168,184,000	1,619,005,000
1911.....	1,597,629,000	158,441,000	1,756,070,000
1912.....	1,965,659,000	191,396,000	2,157,055,000
1913.....	1,708,186,000	136,944,000	1,845,130,000
1914.....	1,939,785,000	146,195,000	2,085,980,000
1915.....	2,201,825,054	163,470,646	2,365,295,700
1916.....	2,552,224,275	214,176,952	2,766,401,227
1917.....	3,233,314,911	153,891,653	3,387,206,564
1918.....	3,216,247,675	85,376,569	3,301,624,244
1919.....	2,407,156,757	171,859,924	2,579,016,681
1920.....	3,079,953,351	158,067,437	3,238,020,788
1921.....	1,675,320,852	103,853,961	1,779,174,813
1922.....	2,707,648,715	177,235,512	2,884,884,227
1923.....	3,168,263,546	†207,106,248	3,375,369,794
1924.....	2,975,231,674	†202,553,793	3,177,785,467
1925.....	3,458,574,585	†254,885,172	3,713,459,757
1926.....	3,750,481,879	†241,883,727	3,992,365,606
1927.....	3,546,778,888	†235,347,756	3,782,126,644
1928.....	3,841,576,534	†278,241,691	4,119,818,225
1929.....	4,068,338,817	340,608,132	4,408,946,949

* Includes 6,555,855 pounds in 1904 of "other sheet iron and sheet steel, tin or terne plated." † Includes 253,601,576 pounds of long terne plates in 1929, 203,027,669 pounds in 1928, 152,371,645 pounds in 1927, 152,457,892 pounds in 1926, 163,820,675 pounds in 1925, 107,986,974 pounds in 1924, and 106,764,720 pounds in 1923.

PRODUCTION OF CAST-IRON PIPE AND FITTINGS, 1928–1929.

Kinds of pipe.	1928—Net tons.			1929—Net tons.		
	Pipe.	Fittings.	Total.	Pipe.	Fittings.	Total.
Gas and water*...	1,315,198	56,129	1,371,327	1,238,177	54,929	1,293,106
Soil and plumbers.	362,901	137,792	500,693	266,435	91,050	357,485
Total.....	1,678,099	193,921	1,872,020	1,504,612	145,979	1,650,591

* Includes culvert pipe.

PRODUCTION OF IRON AND STEEL GALVANIZED SHEETS AND GALVANIZED FORMED PRODUCTS, 1919–1929.

Years.	Galvanized sheets.	Galvanized formed products.*	Total. Pounds.
1919.....	1,500,575,548	140,494,884	1,641,070,432
1920.....	1,871,360,951	143,894,730	2,015,255,681
1921.....	1,366,883,503	109,956,328	1,476,839,831
1922.....	2,100,991,396	165,713,067	2,275,704,463
1923.....	2,364,862,856	165,741,098	2,530,603,954
1924.....	2,228,960,835	155,901,514	2,384,862,349
1925.....	2,539,112,552	178,319,576	2,717,332,128
1926.....	2,788,473,075	154,372,764	2,943,045,839
1927.....	2,767,615,399	168,500,859	2,936,116,258
1928.....	3,040,763,693	172,453,640	3,213,217,335
1929.....	3,083,975,953	177,727,692	3,261,703,645

* Articles formed or stamped from iron or steel black plates or black sheets and galvanized after the completion of the forming or stamping process.

PRODUCTION OF PLATES AND SHEETS BY KINDS, 1914–1929.

Years. Gross tons.	Universal plates.* Gross tons.	Sheared plates. Gross tons.	Total universal and sheared plates. Gross tons.	Black sheets rolled on sheet or jobbing mills. Gross tons.	Black plates rolled on tin mills.—Gross tons.		Total black sheets and black plates. Gross tons.
					Black plates for tinning.	Other black plate specialties.	
1914...	766,113	1,346,308	2,112,421	1,427,627	938,181	241,017	2,606,825
1915...	954,852	1,923,199	2,878,051	1,836,786	1,093,345	269,512	3,199,643
1916...	1,224,234	2,453,150	3,677,384	2,249,597	1,274,137	252,862	3,776,596
1917...	1,195,199	2,963,039	4,158,238	2,367,752	1,505,338	236,288	4,109,378
1918...	1,234,782	3,885,126	5,119,908	2,073,639	1,489,586	116,002	3,679,227
1919...	992,054	2,899,267	3,891,321	2,099,840	1,144,601	237,052	3,481,493
1920...	1,249,769	3,505,364	4,755,133	2,886,401	1,449,330	246,816	4,582,547
1921...	570,810	1,189,714	1,760,324	1,511,817	786,962	201,471	2,500,250
1922...	1,248,413	2,171,507	3,419,920	2,917,236	1,266,652	364,589	4,548,477
1923...	1,304,227	2,864,518	4,168,745	3,503,071	1,498,830	327,071	5,328,972
1924...	1,001,694	2,147,171	3,148,865	3,266,430	1,415,182	257,406	4,939,018
1925...	1,196,021	2,557,430	3,753,451	4,096,832	1,632,236	325,140	6,054,208
1926...	1,407,547	2,793,635	4,201,182	4,237,479	1,761,944	328,451	6,327,874
1927...	1,244,549	2,476,261	3,720,810	3,979,037	1,657,215	270,672	5,906,924
1928...	1,304,356	2,609,272	3,913,628	4,962,410	1,791,021	338,991	7,092,422
1929...	1,425,300	3,596,841	5,022,141	5,254,998	1,698,640	460,533	7,414,171

* Include flats and bars over 6 inches wide.

PRODUCTION OF WROUGHT PIPE AND SEAMLESS STEEL TUBES, INCLUDING BOILER TUBES, GROSS TONS, IN 1929.

Kinds of pipe or tubes.	Lap weld and butt weld pipe or tubes—Gross tons.			Seamless pipe or tubes—Gross tons.		
	Iron.	Steel.	Total welded.	*Hot finished.	Cold drawn.	Total seamless.
Black, standard.....	57,224	1,166,415	1,223,639	26,965	2,345	29,310
Galvanized.....	42,199	443,191	485,390	2,051	.....	2,051
Oil country goods.....	17,298	1,075,979	1,093,277	872,047	2,133	874,180
Mechanical tubes.....	.....	.....	.....	45,038	105,535	150,573
O. D. & miscellaneous.....	.....	154,758	154,758	5,507	65,184	70,691
Boiler tubes.....	10,052	51,624	61,676	145,851	30,829	176,680
Total..	126,773	2,891,967	3,018,740	1,097,459	206,026	1,303,485

* Does not include hot finished tubes subsequently cold drawn.

PRODUCTION OF MISCELLANEOUS ROLLED PRODUCTS, GROSS TONS.

Products.	1925.	1926.	1927.	1928.	1929.
Hoops.....	205,049	189,814	176,300	176,226	204,246
Bands and cotton-ties.....	356,163	355,926	323,129	384,200	384,706
Long angle splice bars, fish-plate bars, etc.....	822,537	953,563	864,992	797,650	924,803
Rolled sheet piling.....	57,264	57,189	74,793	62,071	102,494
Railroad ties.....	13,826	13,278	13,826	12,266	13,718
Rolled forging blooms, forging billets, etc.....	344,803	362,750	285,527	554,475	527,336
Blooms, billets, sheet bars, etc., for export.....	187	430	549	11,139	40,015
Spike and chain rods, bolt and nut rods, blanks for seamless tubes, etc.....	1,566,084	*1,888,901	*1,751,397	*2,037,503	*2,347,865
Total.....	3,365,915	3,821,851	3,490,513	4,055,530	4,545,183

* For 1929 includes 1,382,171 tons of blanks or pierced billets for seamless tubes, as compared with 1,190,658 tons in 1928, 889,336 tons in 1927 and 883,598 tons in 1926; figures for prior years are not available.

PRODUCTION OF CUT NAILS IN 100-LB. KEGS, 1906–1929.

Years.	Production.	Exports.	Consumption	Years.	Production.	Exports.	Consumption.
1906...	1,189,239	169,519	1,019,720	1918...	418,811	85,668	333,143
1907...	1,109,138	155,212	953,926	1919...	394,477	65,423	329,054
1908...	956,182	157,319	798,863	1920...	844,583	86,427	758,156
1909...	1,207,597	222,565	985,032	1921...	538,834	24,512	514,322
1910...	1,005,233	182,087	823,146	1922...	810,206	78,602	731,604
1911...	967,636	255,854	711,782	1923...	829,604	51,515	778,089
1912...	978,415	208,568	769,847	1924...	741,668	47,537	694,131
1913...	842,038	84,885	757,153	1925...	736,111	36,265	699,846
1914...	769,665	76,676	692,989	1926...	662,403	23,979	638,424
1915...	775,327	94,878	680,449	1927...	702,836	25,715	677,121
1916...	764,835	106,451	658,384	1928...	619,784	29,042	590,742
1917...	461,674	101,362	360,312	1929...	533,833	20,124	513,709

Industrial Men in the Day's News

Edmund A. Doyle, New President, American Welding Society

CUTTING operations on the battleship MAINE *22 years ago fired the spark of ambition which has carried him far in the welding profession.*

ALTHOUGH a graduate and experienced engineer, he started in at the bottom to learn welding and cutting in the Davis-Bournonville Co.'s trade school.

IDENTIFIED with Linde Air Products Co. since 1922, *he has been active in American Welding society affairs since it was formed at the close of the World war.*

INTERESTED in metal cutting operations from 1908 when the battleship MAINE was raised from Havana harbor, Edmund A. Doyle since has greatly increased his knowledge of that field. Identified with Linde Air Products Co., New York, since 1922 and a consulting engineer of that company since 1926, he was elected president of American Welding society as noted in IRON TRADE REVIEW of April 24. At the early date referred to, however, when metal cutting and welding was in its infancy, Mr. Doyle, then a civil engineer, became a cutter at Havana, Cuba, when the MAINE was being buoyed up by pontoons. Other work followed, but in 1916 came his next contact with metal cutting. He took a course at the Davis-Bournonville Co.'s trade school at Jersey City, N. J., to learn the foundation principles of welding and cutting. Later he was transferred to Philadelphia as a salesman.

Late in 1917 he entered the United States army as first lieutenant of engineering corps, achieving the rank of a major. He spent much time in designing and purchasing engineering equipment and thus maintained his identification with the welding industry. Honorably discharged in 1919, he returned to the Davis-Bournonville Co., for a time as works manager and later as general manager. On March 17, 1922, he became affiliated with Linde Air Products Co., New York, as engineer in charge of field service and four years later he became consulting engineer for the company.

Mr. Doyle was born in Baltimore, in 1881, where he was assistant city engineer from 1906 to 1907 prior to practicing engineering in Central America, Cuba and elsewhere for several years. While in Cuba he did some prospecting and also cleared up the mill property of the New York, Honduras & Rosario Mining Co. Returning to the United States in 1914, he practiced civil engineering for two years prior to forming his Davis-Bournonville Co. connection.

Prominent in American Welding society activities since its formation, he was a director for several years, and served as chairman of its committee on fusion, welding and gas cutting in building construction. He resigned this chairmanship when he became president, but still is a member. He is a charter member of the Society of American Military Engineers, organized July 13, 1920, and until his resignation last year was a reserve in the corps of engineers, United States army, and was active in the engineer procurement division, New York district, in charge of production.

ARTHUR SCHAEFFER, who has been district sales manager at Detroit for the Central Alloy Steel Corp., Massillon, O., has been appointed district sales manager at Detroit for the Republic Steel Corp., Youngstown, O., of which the Central Alloy corporation is now a unit.

W. J. Hanna, who has been district sales manager at Detroit for the Republic Iron & Steel Co., also a unit of the new Republic Steel Corp., has been

made assistant sales manager at Detroit.

The Republic Steel Corp., in addition to the Central Alloy and Republic companies, now embraces the former Union Drawn Steel Co., Interstate Iron & Steel Co., Bourne-Fuller Co., Donner Steel Co. and Witherow Steel Corp.

Mr. Schaeffer was born at Bucyrus, O., Feb. 23, 1879, where he attended high school. After leaving Ohio State university he became affiliated in 1899 with hoop and bar mills of J. Painter & Sons, Pittsburgh, and in 1900 entered the order and shipping departments of American Steel Hoop Co. Two years later he was employed by Carnegie Steel Co. in scheduling of bar mills and in order and shipping departments. In 1908 he was made western sales manager of United Steel Co., Canton, O., with headquarters at Chicago, and after four years became identified with the operating department of Beaver Dam Malleable Iron Works, Beaver Dam, Wis.

After about a year he was made assistant district sales manager at Chicago for Trumbull Steel Co., Warren, O., and in 1914 was placed in charge of alloy steel department of La Salle Steel Co., Chicago. In 1916 he was appointed western sales manager at Chicago for Central Steel Co., Massillon, O., and a year later was promoted to be assistant general sales manager at the home office. Transferred to Detroit in 1919 as district sales manager, he continued in that capacity when in 1926 the company's name was changed to Central Alloy Steel Corp. Now he will discharge those duties for the merged companies under Republic Steel Corp.

* * *

Vincent Bendix, president of Bendix Aviation Corp., Chicago, has been nominated for the presidency of the Society of Automotive Engineers for 1931.

* * *

J. W. Henry, metallurgist, Electro Alloys Co., Elyria, O., manufacturer of high temperature heat resisting alloys, has been appointed general superintendent.

* * *

E. W. Cooney, manager of Anderson Engine & Foundry Co., Anderson, Ind., has been elected president of the Anderson Rotary club for the ensuing year.

* * *

Dr. Robert J. Anderson resigned recently as vice president and director of Fairmont Aluminum Co., Fairmont, W. Va. He received his education at Case School of Applied Science, Cleveland, and at Massachusetts Institute of Technology. After serving a year as instructor in metallurgy at Missouri School of Mines, Rolla, Mo., he became chief metallurgist for Cleveland Metal Products Co., Cleveland. In 1918 he became research metallurgist for the bureau of aircraft production, and later was appointed metallurgical engineer in charge of nonferrous metal at United States bureau of mines, Pittsburgh, where he remained until 1924.

* * *

James L. Mahon, who on May 2 was elected president of the Detroit Foundrymen's association, has been superintendent of American Car & Foundry Co., Detroit, since July 14, 1912. He

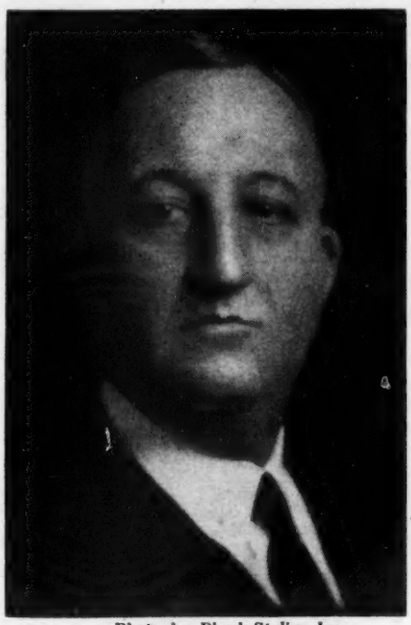


Photo by Blank-Stoller Inc.
ARTHUR SCHAEFFER

was born in Detroit Feb. 7, 1881, and was employed Sept. 26, 1896, by the American company as car clerk. He later became in turn superintendent's clerk, storekeeper and special traveling representative.

* * *

Ralph Wabiszewski, who has been identified with the Maynard Electric Steel Casting Co., Milwaukee, for the past 12 years, has been promoted to be its foundry superintendent to succeed Frank Meyers. Mr. Meyers resigned, as noted in IRON TRADE REVIEW of May 29.

* * *

Roger M. Clark, who for nine years has been sales manager for Ross-Willoughby Co., Columbus and Springfield, O., dealer in mill, plumbing and factory supplies, has been appointed general manager. He succeeds E. S. Bolen, resigned.

* * *

John F. Taylor has been appointed Chicago district representative in charge of the western office at 812 State Trust building, Moline, Ill., of Crucible Steel Co. of America, New York He has been connected with its Chicago office for the past 17 years.

* * *

W. L. Lewis, formerly assistant comptroller, of Bethlehem Steel Corp., Bethlehem, Pa., was elected vice president, secretary and treasurer of Chicago Pneumatic Tool Co., New York, at a meeting of the board of directors June 3. He succeeds J. G. Grimshaw, secretary-treasurer, who resigned.

* * *

William E. Balliet has been made branch office manager at Birmingham, Ala., for Blaw-Knox Co., Pittsburgh and Blawnox, Pa. His headquarters are located in the Brown-Marx building, Birmingham. He succeeds P. V. Kelly.

Joseph Riley has been appointed assistant manager at Birmingham.

* * *

H. R. Beckwith, formerly with Oliver Farm Equipment Co., Chicago, has been appointed head of Belle City Mfg. Co., Racine, Wis. Mr. Beckwith has had a long experience in the farm implement industry. He formerly was assistant sales manager of the former Oliver Chilled Plow Works, South Bend, Ind.

* * *

Charles W. E. Clarke, consulting engineer of United Engineers & Constructors Inc., Philadelphia, sailed June 4 to attend, as American delegate, the world power conference at Berlin, June 16 to 26. Mr. Clarke will present at the conference a paper on the power supply for the steel industry. While abroad he will study industrial power problems in large centers.

* * *

Hayden B. Russell, formerly associated with the Carboloy Co. and the Speakman Co., has been appointed sales representative in the metropolitan district of New York for the Modern Tool Works division of Consolidated Machine Tool Corp. of America, Rochester, N. Y. His headquarters will be 150 Broadway, New York.

* * *

H. C. Hoover, superintendent of the Springfield, O., plant of Ohio Steel Foundry Co., Lima, O., since early in 1928, has been transferred to Lima as superintendent. He succeeds C. M. Zipf, now superintendent of the company's Bay City, Mich., plant. For the time being a superintendent will not be appointed at Springfield, the work being divided among various foremen. Prior to becoming identified with Ohio Steel Foundry

Co., Mr. Hoover was general foreman of No. 1 foundry, Hubbard Steel Foundry Co., East Chicago, Ind.

* * *

Robert S. Hammond, formerly manager of Chicago district sales for Whiting Corp., has been made sales manager with headquarters at the company's plant at Harvey, Ill.

R. E. Prussing, vice president, formerly manager of Whiting Corp.'s Cleveland office, is now in charge of Chicago district sales with headquarters in the company's new Chicago office, Civic Opera building, 20 North Wacker drive.

* * *

A. R. Mathieson, director of welfare work, Carnegie Steel Co., Pittsburgh, has been elected president of the Pittsburgh Personnel association.

* * *

Fred L. Obert, associated for the past 36 years with the American Shipbuilding Co., Cleveland, has been appointed general superintendent of the Cleveland plant. He formerly was foundry superintendent.

* * *

J. A. Callahan, formerly vice president and general manager of Martin Parry Corp., and later manager of the Buffalo plant of Curtiss Wright Corp., has become associated with Briggs Mfg. Co., Detroit, in charge of new development.

* * *

C. H. L. Flinterman and Carlton M. Higbie, president and chairman, respectively, of Wilcox-Rich Corp., Saginaw, Mich., have been added to the board of directors of Eaton Axle & Spring Co., Cleveland, with which the former company is to be merged.

* * *

John A. Northwood, director of safety at the Sparrow's Point, Md., plant of Bethlehem Steel Co., has been appointed management's representative at that plant. Mr. Northwood was transferred to Sparrow's Point from the Cambria plant at Johnstown, Pa., in December, 1928, having been safety engineer there for several years.

* * *

Olin Livingston former assistant sales manager and advertising manager of Roller Bearing Co. of America, Trenton, N. J., has been promoted to sales manager.

L. E. Goodrich has been appointed to represent the company in a sales capacity along the Atlantic seaboard. He formerly was connected with Rollway Bearing Co., Syracuse, N. Y.

* * *

James T. MacKenzie, chief chemist of American Cast Iron Pipe Co., Birmingham, who was graduated from the University of the South in 1912, was granted an honorary doctor of science degree by that university at graduating exercises in Sewanee, Tenn., last week. He has been with the American company since 1914. Mr. MacKenzie completed his master's degree work in chemistry following his graduation.

* * *

Heyman Rosenberg, vice president of Parker-Kalon Corp., New York, was awarded the Franklin institute's certificate of merit at the medal meeting at Philadelphia, May 21, for his development of hardened self-tapping screws for fabrication of metal products. His first invention along this line was a self-tapping sheet metal

HEYMAN ROSENBERG

screw, his second the hardened metallic drive screw with a spiral form of hardened thread and the third a screw-nail, combining the driving qualities of a nail and the holding features of a screw.

* * *

Harry R. Rowland has been appointed Philadelphia division manager of A. M. Byers Co., Pittsburgh, to succeed John C. Chaffe. who as noted in IRON TRADE REVIEW of June 5, resigned to become assistant to the president of Wrought Iron Co. of America, Philadelphia. Mr. Rowland was previously a member of the Pittsburgh sales force of A. M. Byers Co.

Mr. Chaffe had been Philadelphia division manager since the end of the World war. He was born in New Orleans in 1891 and was graduated as a mechanical engineer from Lehigh university in 1914. He then became affiliated with the Byers company, obtaining experience at company mills and as a member of its New York sales staff. He served in American expeditionary forces during the World war and following the armistice he rejoined the company, establishing its Philadelphia office, of which he since has had charge.

* * *

Dr. Homer H. Lowry, research chemist with the Bell Telephone Laboratories Inc., New York, has been appointed head of the newly founded coal research laboratory at Carnegie Institute of Technology, Pittsburgh. The laboratory was made possible through contributions from the Buhl foundation and six industrial concerns, which have pledged $425,000 for a 5-year program. These companies are United States Steel Corp., General Electric Co., Koppers Co., New York Edison Co., Westinghouse Electric & Mfg. Co., and the Standard Oil Co. of New Jersey.

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A. H. Chappelka has resigned as vice president of Lake City Malleable Co., Cleveland, formerly the foundry division of Chisholm-Moore Mfg. Co. Mr. Chappelka had been associated with the Chisholm-Moore company from 1902 until 1928 and during the greater part of that period served as vice president in charge of operations. He was born in Cleveland, in 1882 and received his education in the public schools. He is a member of the Malleable Iron Research association and a sponsor of the Cleveland Foundry Trade school recently established by a group of Cleveland foundrymen.

* * *

J. S. Langston has been appointed manager of the Witherow die-rolling division at Buffalo of the Republic Steel Corp., Youngstown, O. He will handle the sale and development of die-rolled products. He formerly was general sales manager of the Witherow Steel Corp.

Floyd Smith, former president of the Donner Steel Co. Inc., Buffalo, will act in a special executive capacity, assisting in the administration of the Republic corporation's affairs in the Buffalo district.

James J. Daly, formerly traffic manager of Donner company, has been advanced to an executive position in the general traffic department of the Republic corporation at Youngstown. He was given testimonial dinners by the Buffalo chamber of commerce and by the Niagara Frontier Industrial Traffic league prior to his departure for Youngstown, being president of the latter organization.

German Mills May Reduce Wages

Proposal To Pass 10 Per Cent Cut to Buyers Generally Considered—Markets Depressed—British Association Decides To Maintain Pig Iron Prices

European Headquarters,
IRON TRADE REVIEW,
Caxton House, Westminster, S. W.1

LONDON, June 10.—(*By Radio*)—European iron and steel markets continue in an unfavorable situation. In Germany a proposal to reduce wages 10 per cent, passing the reduction on to steel prices, may be generally accepted. In Belgium two blast furnace stacks were blown out in the past week. Iron and steel plants are working part time and it is feared unemployment may become a problem. Domestic business in France shows further signs of slackening.

The steel market in Great Britain is quiet. Continental prices are low but few orders are being placed there. Expectations of shipbuilding orders is tending to improve the outlook in the west of Scotland.

Stocks of pig iron are attaining large proportions at Middlesbrough. Parcels are being sold on the Continent. Makers of hematite face keener foreign competition. Pease & Partners Ltd. have booked a five-year contract for delivery of 175,000 tons of hematite to Sheffield. The British Pig Iron association has decided to maintain prices at present levels. Some merchants are placing orders. Makers of iron bars in South Staffordshire are working regularly.

British Pig Iron Makers Refuse To Cut Prices

BIRMINGHAM, Eng., May 30.—(*European Staff Service*)—Midland pig iron producers held their monthly meeting yesterday and decided to make no change in the current price of pig iron. There is much resentment among the merchants and consumers at the refusal of blast furnacemen to give way on the question of price, but producers state their reason for upholding the standard is the same as declared a month ago when they announced that the passing of the coal mines bill was likely to increase costs of pig iron production. That this does not satisfy most consumers is obvious.

Sterling $4.86

The price of coke today is about 14s ($3.39) a ton at ovens, whereas when present pig iron prices were fixed eight months ago contracts were being made at 18s ($4.38) and over. There has been no buying of pig iron during the last few weeks and sellers yesterday declared that conditions were if anything worse than a week ago. It is realized that a reduction would have had to amount to at least 5s ($1.21) to stimulate demand.

In Derbyshire activity at pipe foundries accounts for much of the local output of pig iron, but furnaces which depend upon ordinary sources of consumption find that stocks are increasing week by week. Northampton furnaces are also making more iron than they can dispose of, but it is said that pig iron makers have always been accustomed to carry heavy stocks and have probably been in a worse position than they are today. So far the putting out of furnaces has been done in districts other than the Midlands.

In the Middlesbrough district inquiries and orders for pig iron are

Current Iron and Steel Prices of Europe

Dollars at Rates of Exchange, June 9	*British* Gross Tons U. K. Ports		*French* Metric Tons Channel Ports		*Belgium and Luxemburg* Metric Tons Channel Ports		*German* Metric Tons Rotterdam or North Sea Port	
Export Prices f. o. b. Ship at Port of Dispatch—By Cable								
PIG IRON		£ s d		£ s d		£ s d		£ s d
Foundry No. 3, Silicon 2.50-3.00	$16.40	3 7 6*	$16.28	3 7 0	$16.28	3 7 0	$16.28	3 7 0
Basic-Bessemer	15.92	3 5 6	15.07	3 2 0	15.07	3 2 0	15.80	3 5 0
Hematite, Phosphorus 0.02-0.05	17.98	3 14 0	24.69	630*	.....	.....	17.74	3 13 0
SEMIFINISHED STEEL								
Billets	$29.77	6 2 6	$22.84	4 14 0	$22.84	4 14 0	$22.60	4 13 0
Wire rods	41.31	8 10 0	30.38	6 5 0	30.38	6 5 0	30.38	6 5 0
FINISHED STEEL								
Standard rails	$40.10	8 5 0	$31.59	6 10 0	$31.59	6 10 0	$31.59	6 10 0
Merchant bars	1.74c	8 0 0	1.18c	5 7 6	1.18c	5 7 6	1.18c	5 7 0
Structural shapes	1.68c	7 15 0	1.12c	5 1 6	1.12c	5 1 6	1.12c	5 1 6
Plates, ship, bridge and tank	1.79c	8 5 0	1.44c	6 10 6	1.44c	6 10 6	1.49c	6 15 0
Sheets, black, 24 gage	2.17c	10 0 0	2.17c	9 17 6	2.17c	9 17 6	2.33c	10 12 0
Sheets, galvanized, 24 gage, corrugated	2.47c	11 7 6	2.54c	11 11 3	2.54c	11 11 3	2.97c	13 10 0
Bands and strips	2.17c	10 0 0	1.29c	5 17 6	1.29c	5 17 6	1.29c	5 17 6
Plain wire, base	2.06c	9 10 0	1.46c	6 12 6	1.46c	6 12 6	1.46c	6 12 6
Galvanized wire, base	3.04c	14 0 0	1.76c	8 0 0	1.76c	8 0 0	1.76c	8 0 0
Wire nails, base	2.39c	11 0 0	1.46c	6 12 6	1.46c	6 12 6	1.54c	7 0 0
Tin plate, base box 108 pounds	$ 4.43	0 18 3	.....	.....	.....	.....	$ 8.99	1 17 0

*Francs

Domestic Prices at Works or Furnace—Last Reported		Francs		Francs		Marks
Foundry No. 3 Pig Iron, Silicon 2.50-3.00	$16.40	3 7 6	$19.21	490(2)	$17.30	620	$20.28	85
Basic pig iron	15.92	3 5 6	20.58	525(1)	15.07	540	21.71	91
Furnace coke	3.40	0 14 0	6.59	168	6.00	215	5.13	21.50
Billets	29.77	6 2 6	24.30	620	22.60	810	28.87	121
Standard rails	1.79c	8 5 0	1.46c	810	1.62c	1,245	1.51c	140
Merchant bars	1.74c	8 0 0	1.22c	680	1.25c	965	1.52c	141
Shapes	1.84c	8 10 0	1.26c	700	1.22c	940	1.49c	138
Plates, ship, bridge and tank	1.95c	9 0 0	1.46c	810	1.52c	1,170	1.71c	158
Sheets, black, 24-gage	2.28c	10 10 0	2.72c	1,510	2.60c	2,000	1.40c	130
Sheets, galvanized 24 gage, corrugated	2.58c	11 7 6	3.52c	1,955	3.06c	2,350	3.78c	350
Plain wire	2.06c	9 10 0	2.03c	1,125	2.15c	1,650	2.43c	225
Bands and Strips	2.17c	10 0 0	1.39c	770	1.50c	1,150	1.77c	164

*Middlesbrough; †Basic; ‡delivered; (1) Basic-bessemer; (2) Longwy. British export furnace coke £0 14s 0d ($3.40) f. o. b. Ferromanganese £19 6s 0d ($93.80) delivered Atlantic seaboard, duty-paid. German ferromanganese £15 0s 0d ($72.90) f. o. b.

The equivalent prices in American currency are in dollars per ton for pig iron, coke, semi-finished steel and rails; finished steel is quoted in cents per pound and tin plate in dollars per box. British quotations are for basic open-hearth steel; French, Belgian, Luxemburg, and German are for basic-bessemer steel.

slightly better, but most business is for day to day needs. These are sufficient to check the increase in stocks of iron but the output is still much in excess of local production, and makers find it difficult to dispose of iron in Scotland. This week 5100 tons of Indian pig iron were landed at Scottish ports. A few export orders for hematite have been arranged, but they have been possible only at prices below £3 14s ($17.97) for east coast. The order for rails at Middlesbrough has given a welcome fillip to the Teeside trade. For the most part and manufactured steel mills are short of orders and are working short time.

The Metropolitan Cammell Carriage Wagon & Finance Co. Ltd., Birmingham, has received an order from the Sao Paulo Brazilian Railway Co. Ltd. for 100 40-ton open steel bogie freight cars. With a few orders placed recently and some work for overseas buyers on the books local builders are improving their position.

In South Wales the steel trade is in a poor way. Welsh steel bars continue at £6 10s ($31.59) per ton but sales are made below this figure, owing to keen competition for orders. In addition they are being undercut severly from the Continent. Works which usually make regular purchases of scrap have signified their intention to hold off the market, and merchants in Birmingham say it is almost impossible to define prices, owing to the small business being placed. Welsh makers are not paying more than £2 17s 6d ($13.96) for scrap delivered and Midland steelworks offer £2 10s ($12.15). For turnings the price is usually 10s ($2.43) less but owing to weakness of the market all previous standards are being set aside.

The slump on the Continent is applying a severe test to the cartel system and it is believed that manufacturers are short of orders. For products outside the price control prices are falling rapidly. In the Midlands this week No. 3 Belgian iron has been offered as low as £6 ($29.16), delivered, equivalent to £4 18s ($23.80) f.o.b. Antwerp. This figure is certainly lower than for many months past. Merchants point out that if there were any demand for nut and bolt bars this iron would no doubt take preference over steel as steel bars are still fixed at a minimum of £5 7s 6d ($26.11) f.o.b., but their experience is that not even these low prices can impart life to the present dull market.

In the finished iron trade of South Staffordshire conditions are similar to those prevailing during the last few months. There is a steady run on best quality bars and iron strip makers have a fair amount of work to execute, although forward business is absent. They complain strongly of the refusal of pig iron makers to afford relief in production costs. Twelve months ago it seemed that in the Staffordshire iron trade the turn of the tide had come, but with this year's widespread depression and the severity of foreign competition it seems likely that the number of firms making Staffordshire wrought iron will be further reduced.

German Pig Iron Producers Are Going Bankrupt; Wages Being Cut

BERLIN, May 31. — (*European Staff Service*)—Business in the German iron and steel market during recent weeks has continued to decline. Unfavorable conditions which have for some time existed in most iron-consuming industries have influenced steel business; a a result, activity has further decreased. At the August Thyssen works, 750 workers have been dismissed, while the Gutehoffnugs-Hutte has asked for permission to dismiss 400 workers. The rate of reduction of production of the European Steel entente has been maintained at its existing level for May and June, but it is rather doubted whether the output will come up to that figure.

Domestic business is largely hampered by unsatisfactory financial conditions in Germany. The railroads and the building trade are only small buyers. It is estimated that in 1930 about 2,000,000,000 marks less than in 1929 will be spent on the construction of houses. About 40 members of the pig iron association have become bankrupt, while an additional 110 undertakings have had to lay idle their plants. The Erfurt iron trader Schneider & Becker has discontinued payments, liabilities totaling more than 1,000,000 marks.

The most interesting feature on the domestic market is that the merchant bar association has granted permission to producers to fix prices of high-quality steel independently. This question is connected with that of the so-called "Ueberpreise." The employers are trying to reduce workers' wages, so that the question of wage-tariffs, which had been settled up to the end of September next, already is being discussed again. It is likely that in connection with a reduction of wages the high domestic prices, which have remained at their present level for more than a year, also will be reduced.

At the recent meeting of the Verein Deutscher Eisenhuttenleute several papers were read on iron research in the United States, and on the quality in the American steel industry. On this occasion it was pointed out that interest in the direct production of iron from ores in Europe was considerably greater than in the United States, owing to the unfavorable conditions existing in Europe in regard to the supply of scrap.

Export sales have remained unsatisfactory. Foreign consumers are reluctant and show only a small interest. This is true with regard to the European markets as well as to overseas countries, which all are suffering to a greater or lesser extent from the general economic prices. German steelmasters would be glad to book foreign orders, even at lower prices, but they are not permitted to do so.

The pig iron market also is slackening. Export prices have been reduced. At home machine makers are working at about only 6 per cent of capacity. In the meantime, stocks at home have accumulated to more than 60,000 metric tons.

Belgian Steelmakers Hold Pink Teas in Absence of Trading

BRUSSELS, May 31.—(*European Staff Service*)—There is no change in the trend of the Belgian iron and steel market, the general tendency being only more accentuated than during recent weeks. Business is scarce, and meetings of the iron and steel exchange, in Brussels or in Charleroi, are more in the form of social gatherings, since, orders being non-existent, it is impossible to transact business. The consequence of such a state of affairs is that works have decided to cease operations two or three days a week, and in the Charleroi district the Societe Metallurgique du Hainaut and the Societe Sambre et Moselle have each dismissed 500 workers. However, up to now there is no unemployment, as the workers can easily be employed on the construction of the canal that has been undertaken along the Sambre.

There has been a meeting of the Belgo-Luxemburg-French price convention. No change in prices has been made, consequently they are as follows: No. 3 foundry pig iron, £3 7s ($16.30) for overseas markets

Franc 2.78

and £3 4s ($15.57) for Great Britain. The basis price of the basic quality is 528 francs ($14.67), and of No. 3 foundry pig iron, 620 francs ($17.23), for delivery in Belgium.

The semifinished products market is quiet. Prices fixed by the entente have not been modified, but transactions are reported at lower rates. Infractions are numerous, and it is evident that they are affected easily; for example, it was said that a works sold 100 tons of first-choice products, but it was decided that a claim should be presented and should be accepted by the seller in order to consider 20 tons as second-choice, and grant a reduction for this.

The position in regard to plates is fairly well maintained. Scrap is falling off, owing to the unsatisfactory position of the open-hearth works and as a result of the heavy tonnage placed on the market by railroads.

Here and There

(*Concluded from Page* 101)

and the International Steel Co., Seattle and Portland, Oreg., will be designated. Offices and warehouse are at 292 First avenue South, Seattle, also at Portland and San Francisco.

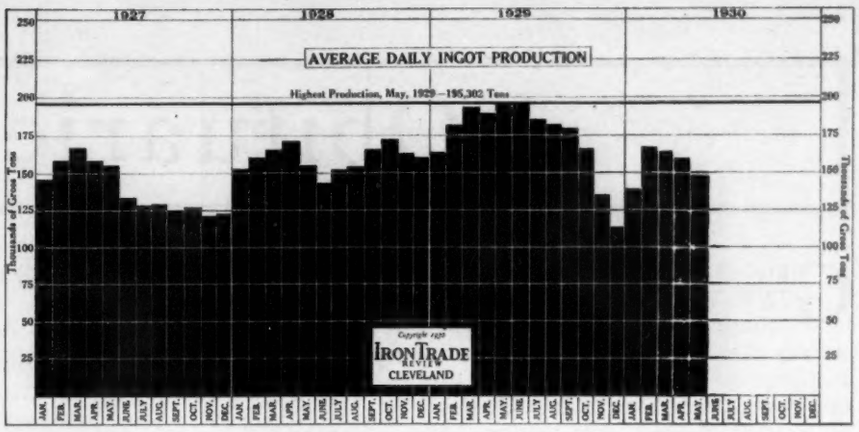
* * *

NORTHERN CONVEYOR & MFG. CO., Janesville, Wis., is manufacturing a line of conveyors for use in coal mines. The machines are designed for loading freshly mined coal. They are balanced so that two men may easily move them about. The Northern company has recently enlarged its facilities.

* * *

INDEPENDENT PNEUMATIC TOOL CO., Chicago, manufacturer of electric and pneumatic tools and air compressors, has bought the Cochise Rock Drill Mfg. Co., Los Angeles, as part of an expansion program. The Cochise company manufactures rock drills and mining tools. The plant will be enlarged and facilities extended. No change will be made in personnel. The Independent Pneumatic Tool Co. was established 25 years ago and has grown until its plant covers an entire block at Aurora, Ill.

Mahan Foundry Co., Dayton, O., has changed its name to the Edgemont Castings Co.



May Ingot Rate Is Lowest Since January; Almost Equals May, 1928

STEEL ingot production in May declined for the third successive month, falling to 149,066 gross tons per day, the lowest daily rate since January. In contrast, ingot production a year ago was at the rate of 195,790 tons, 23 per cent higher than in May, 1930, and barely 1 per cent below the all-time record set last June.

Except for the bulge in February, the trend of ingot production in 1930 has been downward. January opened with a daily rate of 140,596 gross tons. February showed a sharp rise to 169,930 tons, but March fell off to 165,381 tons, April to 159,764 tons and now May to 149,066 tons.

The result is that in the first five months of 1930 the daily rate of ingot production has averaged only 156,561 gross tons, compared with 185,644 tons in the corresponding period of 1929. In these five months the steel industry has been 78.20 per cent engaged, compared with 94.66 per cent a year ago.

The May total of 4,024,778 gross tons, brought the total of all steel ingots, excluding crucible and electric, for the first five months of 1930 to 20,352,960 gross tons. In the comparable period of last year output was 24,133,741 gross tons. Despite the fact that May had one more working day than April, the May total was below that of April for the open-hearth grade, while bessemer production showed a slight increase.

In the accompanying tables are given statistics for 1929 and for 1930 to date. The table for 1929 is completely revised in accordance with the new capacity figure of the American Iron and Steel institute, which rated the steel plants of the country as of Dec. 31, 1928, as being capable of producing 60,990,810 gross tons of bessemer and open-hearth steel ingots. The 1930 statistics are based upon an annual operating capacity of 62,265,670 tons as of Dec. 31, 1929.

Steel Ingot Production—1929-1930

94.27 Per Cent of Industry Reporting

Gross Tons

1929	Open-hearth	Bessemer	Monthly output companies reporting	Calculated monthly output all companies	Number of working days	Approximate daily output all companies	Per cent of operation
Jan.	3,692,062	549,616	4,241,678	4,500,209	27	166,674	84.99
Feb.	3,590,826	489,279	4,080,105	4,328,789	24	180,366	91.97
Mar.	4,180,408	596,691	4,777,099	5,068,265	26	194,933	99.40
Apr.	4,025,409	640,351	4,665,760	4,950,139	26	190,390	97.08
May	4,275,161	707,484	4,982,645	5,286,339	27	195,790	99.84
5 mos.	19,763,866	2,983,421	22,747,287	24,133,741	130	185,644	94.66
June	3,999,363	622,585	4,621,948	4,903,657	25	196,146	100.02
July	3,922,053	649,950	4,572,003	4,850,668	26	186,564	95.13
Aug.	3,987,400	668,023	4,655,423	4,939,172	27	182,932	93.28
Sept.	3,624,954	642,886	4,267,840	4,527,966	25	181,119	92.35
Oct.	3,631,674	642,235	4,273,909	4,534,405	27	167,941	85.64
Nov.	2,796,214	522,672	3,318,886	3,521,173	26	135,430	69.06
Dec.	2,375,797	360,489	2,736,286	2,903,063	25	116,123	59.21
Total	44,101,321	7,092,261	51,193,582	54,313,845	311	174,643	89.05
1930							
Jan.	3,137,002	441,572	3,578,574	3,796,090	27	140,596	70.22
Feb.	3,336,021	508,618	3,844,639	4,078,327	24	169,930	84.88
Mar.	3,513,904	539,616	4,053,520	4,299,905	26	165,381	82.60
Apr.	3,406,610	509,234	3,915,844	4,153,860	26	159,764	79.80
May	3,265,190	528,968	3,794,158	4,024,778	27	149,066	74.45
5 mos.	16,658,727	2,528,008	19,186,735	20,352,960	130	156,561	78.20

Figures exclude crucible and electric ingots. Operating percentages for 1929 are based on capacity of 60,990,810 gross tons as of Dec. 31 1928, for 1930, on capacity of 62,265,670 tons as of Dec. 31, 1929.

To Make Nirosta Tubes

Krupp Nirosta Co., Inc., Watervliet, N. Y., has granted a license to the Ohio Seamless Tube Co., Shelby, O., to manufacture seamless tubing from Nirosta KA2 corrosion and heat resistant nickel-chromium steel.

Lynch Glass Machine Co., Anderson, Ind., has changed its name to the Lynch Corp.

Obituaries

GEORGE EDMUND MERRYWEATHER, 58, president of Motch & Merryweather Machinery Co., Cleveland, died June 8 at Gates Mills, O. He was born at Cincinnati Aug. 28, 1872, and was educated at Massachusetts Institute of Technology, graduating in 1896 with a B. S. degree in mechanical engineering. That year he became identified with Brown & Sharpe Mfg. Co., Providence, R. I., and was in charge of its exhibit at the Paris exposition in 1900. Remaining until 1901, he then became superintendent of Overman Mfg. Co., Chicopee Falls, Mass., builder of steam driven automobiles, and when that company merged with the Locomobile Co. of America, he became its superintendent. In 1904 Mr. Merryweather with Edwin R. Motch and Stanley Motch organized the Motch & Merryweather machinery Co., Cleveland, with branch offices in Cincinnati, Detroit and Pittsburgh. During the World war Mr. Merryweather was chief of the machine tool section of the War Industries board. He held many patents pertaining to the machine tool industry. At the time of his death he was a director of Central United National bank, member of American Society of Mechanical Engineers, Cleveland Engineering society, Cleveland chamber of commerce, Technology club of Northern Ohio, as well as University, Union Mayfield, Philosophical and Chagrin Valley Hunt clubs, Cleveland, Detroit Athletic club, Detroit, and Cincinnati club, Cincinnati.

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M. F. McAvoy, 36, superintendent of blast furnaces of St. Louis Gas & Coke Corp., died suddenly at St. Louis last week. He had been connected with the company since 1922, coming to it from Illinois Steel Co.

* * *

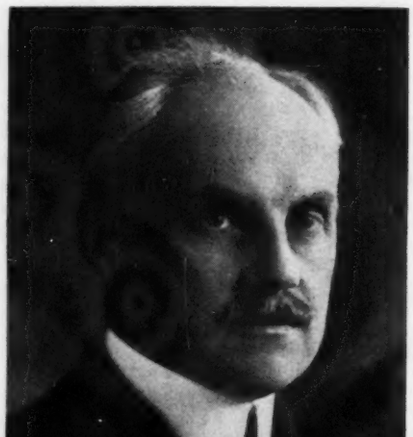
Charles W. Mouch, 66, organizer of the Indiana Rolling Mill Co., Newcastle, Ind., and first president of the Pan American Bridge Co., Newcastle, died recently after an illness of several months.

* * *

Edward B. Cowles, 43, an engineer associated since 1924 with the American Engineering Co., Philadelphia, died at New York, June 8. Mr. Cowles graduated from Yale in 1910 and was a captain in the twenty-seventh division in the World war.

* * *

Arthur J. Selzer, commercial agent for Westinghouse Electric Supply Co., East Pittsburgh, Pa., for the past four years, died at Hot Springs, Va., while attending the convention of the National Electrical Manufacturers association. He entered the electrical supply field in 1904 with Varney Electrical Supply Co., Indianapolis, and since has been with Electric Appliance Co., Chicago, sales manager of Central Electric Co., Chicago, general manager of B-R Electric Co., Kansas City, Mo., and manager of the New York district of Manhattan Electric Supply Co., leaving in 1926 to become commercial agent for the Westinghouse company.



GEORGE EDMUND MERRYWEATHER

* * *

Joel H. Prescott, 84, one of the organizers of the Automatic Transportation Co., Buffalo, manufacturer of industrial trucks, tractors, etc., and its secretary-treasurer from 1906 until his retirement in 1926, died recently at Buffalo.

* * *

Horace M. Jerome, chief engineer of United States Pressed Steel Co., Ypsilanti, Mich., since 1925, died at his home in Ann Arbor, Mich., May 26. He was at one time chief engineer of the Chalmers Motors Co., and was a charter member of the Society of Automotive Engineers.

* * *

E. D. Green, president of Garden City Fan Co., Chicago, died May 29. He was the son of W. W. Green, the founder of the company, and was born in Bergen, N. Y. in 1865. He was a pioneer in fan and blower business.

* * *

John E. Charles, 35, sales engineer, Grindle Fuel Equipment Co., Harvey Ill., a subsidiary of Whiting Corp., died at his home in Rochester, N. Y., May 2. Previously he had been associated with the Pfaudler Co., and the Symington Co., Rochester, N. Y. and American Radiator Co., Buffalo.

* * *

Albert Mentall, 47, superintendent of the cold-rolled strip department of Sharon Steel Hoop Co., Sharon, Pa., died June 8. He had been affiliated with the Sharon company for two years, formerly having been identified with the American Steel & Wire Co. at its Cuyahoga works, Cleveland. He left to start the cold-rolled strip department at Sharon.

* * *

Boone V. H. Johnson, 63, vice president and general agent of the Commonwealth Steel Co., died in St. Louis, June 2, after an illness of several weeks. He had been connected with the steel company for the past 12 years. Prior to that he was affiliated with the Pullman Co. in the capacity of designer, and with the general engineering department of New York, New Haven & Hartford railroad.

* * *

E. J. Woodison, president of E. J. Woodison Co., a Detroit foundry, died May 23 at Grace hospital, Detroit. He was born in Ridgetown, Ont., Can., April 23, 1874. He began his carreer in the foundry supply business as a bookkeeper with the Frederick B. Stevens Inc., Detroit. Later he served as salesman for that company and as Detroit representative for the S. Obermayer Co., Chicago. He organized Detroit Foundry Supply Co., Detroit, in 1904, and served as its president until 1911. In that year he organized E. J. Woodison Co. and was its president until his death.

Machinery

Tool Manufacturers Scale Down Plant Operations as Sales Continue to Lag—Light Summer Schedules Expected

ALL machine tool markets show spottiness with orders few and small. For the most part purchases are for one or two units and inquiries are small and of a miscellaneous character. Reflecting the lowered sales volume, several tool manufacturers have further curtailed plant operations. Aircraft interests, last year substantial buyers of production equipment, are almost completely out of the market and are not expected to require machinery during the balance of the year. Dealers are receiving some holdups and cancellations, although to a lesser extent than might be expected under the general business conditions. Equipment estimated at $1,000,000 will be required for nine Chicago schools but the purchases will not be made this year.

New York, June 10.—Machine tool orders and inquiry show no general improvement. The first ten days in June have been slower than the May average. Sales are limited to one or two tools at a time. Delivery on standard equipment is prompt. Prices show no change. Builders have curtailed working forces in some cases rather sharply. Only in a few isolated cases are industrial plants operating near a normal schedule. One exception is a Connecticut bearing interest supplying Chevrolet. This plant is busy, but has no active inquiry.

Dullness appears to prevail in all machinery lines. Grinders are not moving as well as they were two months ago. The airplane engine building industry is still in the slump, evident since the first of the year. One exception is noted, a Pennsylvania interest which recently stepped up its schedule. This company was a heavy buyer of machine tools last year, however, and not much demand for new equipment is expected. The opinion among machinery men is that the aircraft building industry is overtooled, that a spurt in the demand for engines would not be reflected greatly in buying of machine tools. Railroads are taking a few machines.

For construction of a new plant in South America, the Chicago Pneumatic Tool Co., and Ingersoll-Rand Co. have received substantial orders for air tools from the Anglo-Chilean Consolidated Nitrate Corp.

Worcester, Mass., June 10.—Last week was a drab one in the machinery market. The vacation season now is adding further obstacles in the way of progressive purchasing. There is some inquiry throughout New England in lathe and milling machines but no great volume. Grinders are moving slowly under the stimulus of some export trade. Some dissatisfaction is being expressed over the political situation and business men are chafing under the delay on the tariff bill and the growing belief that political maneuvering is unduly affecting the business situation.

Pittsburgh, June 10.—Machine tool awards and inquiry are fairly well maintained and although some holdups and cancellations are encountered this situation is regarded as less serious than general business conditions appear to warrant. Recent inquiry includes several tools for the Youngstown Sheet & Tube Co., in addition to several additional for two and more tools at a time. Awards generally run to individual machines. The crane market continues quiet.

Chicago, June 10.—Machine tool houses report a fair sales week, including some unusual items and scattered remaining orders on the big lists of Majestic Household Utilities Corp. and Nash Motors Co. No evidence is seen of well sustained buying, and sales offices are adjusting their affairs to expected light summer schedules. Estimates are that equipment for the Lane Technical high school, Chicago, will exceed $1,000,000 as nine machine shops will be equipped, each with 24 lathes besides a large amount of additional equipment. The order may not be closed this year, and probably will be widely distributed. Bids on the 18 lathes and other equipment for Austin high school now are in the hands of the purchasing department of the Chicago board of education. Action has been further deferred.

Burlington railroad closed on two 20-inch lathes and a wheel press, and Santa Fe on a 16-inch lathe. Rock Island and Union Pacific each bought a horizontal boring mill, the latter road also ordering a $12,000 forging machine. A local steel plant closed on a 32-inch shaper, and a Kansas City structural shop also purchased equipment in this market. Sheet metal shop equipment was active, and inquiry has been spirited for radial drills. Some dealers report May a decidedly dull month, but others exceeded March and April. Prospects are that June may hold approximately to the May level for a number of dealers. Deliveries are about normal.

Equipment required for the machine shop of the new Division street, shop and service building being erected by the Peoples Gas Light & Coke Co. constitutes a list amounting to about $25,000, including two lathes, two drills, two pipe machines, shaper, grinder, wood saw, metal saw and 5-ton crane.

Cleveland, June 10.—A leading builder of turret lathes here has reduced operations to three days a week, sales having dropped another notch. A milling machine dealer reports not a machine sold thus far this month. General conditions are poor, and the outlook is unimproved. The Indiana Harbor, Ind., plant of Youngstown Sheet & Tube Co. purchased several machines for replacement, through a Cleveland dealer. Other sales were for single units mostly. Credit is being tightened on export business, especially for Russia, manufacturers hesitating to tie up much money in a country where governmental conditions are so unstable. June awards, according to most dealers, will be considered good if they equal the May total.

Associated Tool Dealers Discuss Selling

Representatives of machine tool dealers in 15 cities attended the spring convention of the Associated Machine Tool Dealers, at Granville, June 4 and 5. The committee's report on the sales contract developed by the joint action of the association and of a committee of the National Machine Tool Builders association, was presented by L. H. Swind, president, Swind Machinery Co., Philadelphia.

Discussion of the experience of various sections with the used machinery appraisal plan emphasized its growing success and value to distributors, manufacturers and the trade. Omar S. Hunt, president, Marshall & Huschart Machinery Co. of Indiana, in speaking on "Selling Machine Tools on the Installment Plan," made a plea for recognition of the part that installment buying now is taking in the machine tool field, and a demand that machine tool dealers in the handling of time sales recognize the need for proper interest and financing charges.

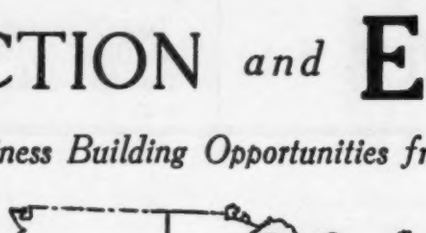
Other discussions included those lead by Homer Strong on the "Handling of Open Machine Tool Lines," and by Harry Barney on "Reciprocity as It Affects the Sale of Machine Tools."

Officers of the association are: President, E. P. Essley, secretary, E. L. Essley Machinery Co., Chicago; vice president, J. W. Wright, president, Colcord Wright Machinery & Supply Co., St. Louis; secretary and treasurer, A. G. Bryant, general manager, machinery division, Joseph T. Ryerson & Son Inc., Chicago.

CONSTRUCTION *and* ENTERPRISE

Concise, Timely Business Building Opportunities from Field of Industry

East Central



ALTON, ILL.—Duncan Foundry & Machine Works, 102 West Second street, has purchased a site, 240 x 300 feet from the Alton Railway Co. William M. Duncan is president of the Duncan company, which operates a machine and pattern shop and is a manufacturer of bronze, aluminum and gray iron castings.

CHICAGO—Wisconsin Steel Co., 606 South Michigan avenue, advises through C. F. Biggert, vice president, that two additional open-hearth furnaces will be built, work to commence during the last half of the year.

CHICAGO—Reichel & Drews, 452 North Ashland avenue, has awarded contract to Chicago Industrial Construction Co., 53 West Jackson boulevard, for 1-story machine shop addition. (Noted May 29.)

CHICAGO—Brazil Stamping & Mfg. Co., maker of sheet metal goods, 3244 West Lake street, has leased 33,000 square feet of land and a 1-story plant at West Sixty-fifth street and Laramie avenue.

CHICAGO—Illinois Steel Co., 208 South LaSalle street, has been awarded three building permits: for a 1-story motor and spare storage plant; 1-story soaking pit; and a 1-story sanitary building. Units will all be built on Brandon avenue at an aggregate cost of over $1,000,000.

CHICAGO—Western Electric Co., executive offices, 11 South La Salle street, will receive bids early in July for a manufacturing plant here that from reports is understood to involve an expenditure of $1,000,000. Condron & Post, structural engineers, 53 West Jackson boulevard, have plans. Home offices of Western Electric Co. are at 195 Broadway, New York.

CHICAGO—Peoples Gas Light & Coke Co., Peoples Gas building, 122 South Michigan avenue, advises that machine shop being constructed at 1241 West Division street, will be 1-story, 37 x 83 feet, and will be equipped with one 5-ton traveling crane, a high-speed drill, one blacksmith's forge, 32 x 44-inch wood saw, 9 x 9-inch metal saw, one 9 x 12-foot lathe, pipe machine, upright drill and shaper among other tools, all of which will be motor driven. An adjoining service building to cost $35,000 will be 1-story, forming an obtuse angle, 40 x 58 x 80 feet. (Noted May 29.)

MOLINE, ILL.—Andrews & Olds Boiler & Welding Co., 3003 Fourth avenue, has purchased two buildings from the Howlett Construction Co., same address, for added shop, storage and office facilities.

PEKIN, ILL.—Pekin Foundry & Mfg. Co., D. P. Sommer, secretary, is adding the manufacture of new shop and garage equipment to include tire-changing machine, armature stand, groove cleaner, gear puller and other equipment lines.

PEORIA, ILL.—Plant of the Best Mfg. Co. was recently damaged by fire, loss amounting to about $20,000. Mill machines and lumber stock were severely damaged.

AKRON, IND.—Akron Foundry Co. board of directors recently conferred with J. C. Rannels, Columbia City, Ind., who is interested in opening the former's foundry. Furnace stokers would be manufactured if negotiations are successful.

GOSHEN, IND.—City council recently convened to consider proposals to install diesel engine units for the manufacture of power for the municipality.

LA PORTE, IND.—Tel Aire Tire Valve Co., A. E. Ashley superintendent, formerly located at Aurora, Ill., has moved manufacturing facilities here to the Mercoid Corp. building, Park street. The company will employ about ten men in the production of a patented air pressure gage.

SOUTH BEND, IND.—Bendix Aviation Corp. is planning an addition to its plant.

TERRE HAUTE, IND.—Quick Welding & Machine Co. was recently reported installing additional lathes, shapers and planers in its machine shop and welding units to care for increased business. V. C. Barbour is secretary.

ANN ARBOR, MICH.—Chamber of commerce, Hackley Butler, secretary, is conferring with officers of both a foundry and a desk manufacturing concern regarding location of the two firms here.

DEARBORN, MICH.—Ford Motor Co., Fordson, Mich., has awarded structural steel contract for substations to be built on Miller road, here. Giffels & Vallet, 604 Marquette building, Detroit, are engineers.

DETROIT—City is having plans prepared by Smith, Hinchman & Grylls, 800 Marquette building, for a substation to be built at Mack and Phillip avenues.

DETROIT—Overcashier Aircraft Mfg. Co. Inc., 13095 Greely street, is increasing its capital $125,000 for the addition of manufacturing facilities on a newly developed monoplane of seamless tube construction.

DETROIT—Swedish Crucible Steel Co., Butler street and Grand Trunk railroad, manufacturer, has two foundry units now under construction, cost of which is estimated at $40,000. Plans are by Henry M. Freier, architect, 300 Murphy building.

DETROIT—James D. Anderson Co., 465 York street, is a new concern, engaging in a light line of machine and blacksmithing work, also manufacturing a patented manhole and form of ladder steps. James D. Anderson, former president of the W. H. Anderson Tool & Supply Co., is president.

GRASS LAKE, MICH.—Village is reported planning to build a water plant.

MARSHALL, MICH.—Wilcox-Rich Corp., manufacturer of automobile parts, is moving valve-making machinery to its plant here from the Battle Creek, Mich., division. With the reopening of this unit for the manufacture of valves, employment will be given to approximately 450 men.

MT. CLEMENS, MICH.—Power plant of the City Steam Laundry Co., North Gratiot avenue, was recently damaged by fire. Loss is estimated at $15,000.

PONTIAC, MICH.—General Motors Truck Co. recently awarded contract to J. A. Utley, construction engineer, 729 Penobscot building, Detroit, for a combined warehouse building and engineering laboratory, and work was recently started. Building is expected to cost approximately $300,000 and about $200,000 additional will be expended on equipment. Completion is expected by August.

BELLEFONTAINE, O.—Bellefontaine Plating & Mfg. Co. will open a chromium and nickel plating establishment here. Grover Ilgen, Springfield, O., is president.

CANTON, O.—Timken Roller Bearing Co. has been reported planning construction of a 120 x 154-foot cone-hardening plant, supposedly to replace one of the old bearing-manufacturing plant units. Plant will be one story.

CLEVELAND — Nickel Plate railroad, Terminal Tower building, has awarded contract to Albert M. Higley Co., 2036 East Twenty-second street, for a plant addition at 1909 East 119th street. Estimated cost, $5000.

CLEVELAND—Corrigan, McKinney Steel Co., 3100 East Forty-fifth street, begins work at once on a 1-story, 100 x 120-foot repair shop to be built at 3175 Independence road at a reported cost of $35,000. Among equipment to be installed will be a 10-ton crane.

CLEVELAND—Contract to build the foundation for a repair shop at 6801 Sidaway avenue for the Cleveland Interurban Railway Co. has been awarded Sam W. Emerson Co., 1836 Euclid avenue. Construction of shop building is to be effected some time in the future.

CLEVELAND—General Electric Co., Nela park, will build a 3-story warehouse on Woodland avenue near East Fifty-fifth street on a site, 210 x 450 feet. Erection of the first unit to cost approximately $75,000 has been let to Sam W. Emerson Co., 1836 Euclid avenue.

CLEVELAND—Westinghouse Electric & Mfg. Co., 1216 West Fifty-eighth street, is receiving bids for a 1-story, 60 x 80-foot galvanizing plant here. Owner's engineering department, East Pittsburgh, Pa., has plans which are part of expansion program already noted. (Noted Feb. 20.)

COLUMBUS, O.—Shilling Foundry, Poplar

avenue and Henry street, manufacturer of gray and semisteel castings, advises that since recent fire loss to part of foundry, plans are being prepared for a large concrete addition. (Noted June 5.)

DAYTON, O.—Board of education, J. W. Graham, Ludlow building, is completing plans for a laboratory addition to the Kiser school here.

DAYTON, O.—General Motors Radio Corp., Wisconsin boulevard, has a permit to construct a $50,000 manufacturing plant on Miami Chapel road and the Big Four railroad, contract for which has been awarded Charles H. Shook Inc.

EAST LIVERPOOL, O.—Patterson Refractories Co. Inc., which was recently incorporated with 1000 no par shares by R. L. Cawood, president, Patterson Foundry & Machine Co., will operate the old No. 1 plant of the Homer Laughlin China Co. in the maufacture of refractories and refractory products. Operations will begin in July.

EUCLID, O.—Armington Engineering Co., manufacturer of hand-power hoisting machinery, will build a plant addition, 80 x 100 feet, and has awarded contract to Albert M. Higley Co., 2036 East Twenty-second street, Cleveland.

FAIRPORT, O.—Ford Motor Co., Fordson, Mich., is negotiating with landowners in this vicinity for the purchase of approximately a 300-acre site upon which an assembly plant will be erected.

KILBUCK, O.—City is receiving bids for waterworks improvements to include installation of a pump, total cost to be about $40,000.

MANSFIELD, O.—Fox Tire Man, 24 West Third street, is installing a machine shop and making additions to parts lines.

NEW BOSTON, O.—Ohio Power Co., Cleveland street, plans a 2-story substation here to cost $40,000.

ORRVILLE, O.—Quality Castings Co., Edward A. McDonald, manager, is occupying the Swartout Co. plant building here. Plant facilities will be altered and rearranged and some new equipment will be added.

YOUNGSTOWN, O.—Martin Motor Truck Co., Garden City, N. Y., is said to plan establishing a manufacturing plant here and officials of the company recently inspected sites. Martin company makes small type automobiles, trucks and airplanes.

BEAVER DAM, WIS.—Beaver Dam Pattern Co., South Center street, advises that J. Seefeldt Contracting Co. has contract for 40 x 95-foot plant to be located at 109 Rowell street. Additional machinery will be added to present equipment in both wood and metal pattern departments. A brass furnace is being installed. Unit will be in operation by August 1. (Noted June 5.)

MAYVILLE, WIS.—Wisconsin Radiator Furniture Co., maker of ornamental metal radiator covers and other stamped and perforated products, has plans by Arthur Kuenzi, consulting engineer, Watertown, Wis., for a plant addition costing about $35,000. G. A. Reading is president of the Wisconsin Radiator company.

North Atlantic

STAMFORD, CONN.—Norma Hoffman Bearings Corp., manufacturer of precision ball, roller and thrust bearings, advises it has placed contract with the Hewlett Co., Bridgeport, Conn., for 2-story plant addition, first floor of which is to be used for manufacturing purposes. (Noted June 5.)

WATERBURY, CONN.—American Brass Co. has awarded contract for $450,000 plant on the Naugatuck river here to Oscar LaCroix Construction Co., 51 West Main street, preliminary work on which was recently noted. Advice states that engineering work will be handled by the company's engineering staff. (Noted May 29.)

BATH, ME.—General Utilities Co., 199 Exchange street, Bangor, Me., is reported having private plans for a manufacturing plant here at a cost of approximately $50,000.

BALTIMORE—Hinde & Dauche Paper Co., 254 Water street, Sandusky, O., has plans through Otto Randolph, contractor, 53 West Jackson boulevard, Chicago, for a 1-story, 250 x 500-foot plant on Biddle street here.

BALTIMORE—J. H. Ferguson, 1918 Harford avenue, awarded contract to B. F. Bennett Building Co., South Howard street, for a 2 and 3-story plant at Elm and Thirty-second street at a reported cost of $215,000.

LUKE, MD.—Fire recently damaged the plant here of the West Virginia Pulp & Paper Co., 200 Fifth avenue, New York. Loss was placed at $10,000.

BOSTON—Central Equipment Co., 31 State street, is reported making inquiry for boiler and hoisting engine equipment.

BOSTON—Charles L. McHugh, 370 Common street, is reported planning to build a 3-story, 60 x 200-foot plant on Alexander avenue at a reported cost of $90,000. Plans are by Franklin E. Leland, engineer, 238 Main street.

SPRINGFIELD, MASS. — City has plans through McClintock & Craig, architects, Bridge street, for a work shop and storage building to be built on Taylor street at a cost of $50,000.

TAUNTON, MASS.—Town will build a power substation here on Meadow street at a reported cost of $40,000.

WATERTOWN, MASS.—New England Telephone & Telegraph Co., 50 Oliver street, Boston, will build a large supply center and warehouse in conjunction with the Western Electric Co. at Mt. Auburn and Grove streets, here.

ALLENHURST, N. J.—Morris & Erskine, architects, 1716 Cherry street, Philadelphia, have plans for a 4-story hospital project here to include boiler plant, ventilating and heating systems. Construction is said to cost $1,000,000.

CAMDEN, N. J.—New York Shipbuilding Co., Broadway and Fairview avenues, plans an improvement and expansion program involving expenditure of about $600,000.

JERSEY CITY, N. J.—Adam Black & Sons Inc., 54 Cambridge street, manufacturer of automobile bodies, has placed contract with A. W. Crone & Son Inc., 338 Palisade avenue, for a 150 x 260-foot manufacturing plant to be built on Tonnele avenue at a reported cost of about $100,000.

SOMERS POINT, N. J.—Board of education, New York avenue, wants manual training machine tools, woodworking machinery and other equipment for the Dawes avenue school.

UNION CITY, N. J.—Motor Aid Corp., recently incorporated by Henry J. Monsees, 34 Prescott avenue, Montclair, N. J., will engage in repair work of automobiles, with $125,000 capital.

BROOKLYN, N. Y.—United Metal Box Co. plant, 514 Union avenue, was recently damaged by fire.

BUFFALO—Ford Motor Co., Fordson, Mich., has been reported negotiating for establishment of a manufacturing plant in this district that is said to involve expenditure of over $1,000,000.

FLUSHING, N. Y.—I. B. Kleinert Rubber Co. has awarded contract for a 1-story, 28 x 50-foot boiler house addition at Fifth and Nineteenth avenues to W. Kiddle & Co., 140 Cedar street, New York, at a reported cost of $40,000. (Noted May 29.)

LOCKPORT, N. Y.—Simonds Saw & Steel Co., manufacturer of saws and machine knives, Fitchburg, Mass., has awarded contract for plant addition here to Morris & Allan Inc., Jackson building, Buffalo. Allis-Chalmers Mfg. Co., Farrel Foundry & Machine Co. and Gas Equipment Co. of Philadelphia have been awarded subcontracts for equipment. (Noted May 22.)

JESSUP, PA.—Simler Safety Razor Co., Charles Sobleskie, president, incorporation of which was recently noted, advises that company plans expanding manufacturing activities with addition of a new line of equipment. Safety razors and safety razor blades are now manufactured. Company contemplates erecting its own plant. (Noted June 5.)

TAMAQUA, PA.—Part of plant at Mixtown, Pa., near here, of the Atlas Powder Co., Wilmington, Del., was wrecked recently by an explosion.

ERIE, PA.—Metric Metal Works, manufacturer of gas meters, is having plans prepared for a large 3-story plant addition.

PHILADELPHIA—Brown Instrument Co., 4517 Wayne avenue, manufacturer of indicating, recording and controlling instruments, advises it has awarded contract to Robert E. Lamb Co., 841 North Nineteenth street, for alterations to plant to include addition of two stories. Construction begins soon. (Noted May 22.)

PHILADELPHIA — Gulf Refining Co., construction department, Palmer and Hope streets, has awarded contract to Smith Engineering Co., 107 West Linwood street, Kansas City, Mo., for a pump house to be erected here at Penrose Ferry, east of the Schuylkill river. Estimated cost, $4000.

PITTSBURGH—Chase Brass & Copper Co., Union Trust building, has leased a warehouse and office building now being built at North avenue near Irwin avenue.

PITTSBURGH—Ford Motor Co., 5000 Baum boulevard, has leased 30,000 square feet of space

in building at Baum boulevard and Morewood avenue to use as additional facility for a parts depot.

PITTSBURGH—Pittsburgh Equitable Meter Co., 400 Lexington avenue, Homewood, has awarded contract for two 1-story plant additions. A. J. Kerr, 834 Kennedy building, is manager.

Southern States

ANNISTON, ALA.—Plant of the General Foundry Co. here was recently damaged by fire, total loss estimated at $35,000. Company manufactures gray iron castings.

GLASGOW, KY.—H. E. Boyle & Co., Evansville, Ind., has plans for a 2-story school here costing about $150,000, to include manual training rooms and chemistry laboratory. Plans are also held by H. E. Boyle & Co. for schools at Russellville, Lebanon Junction and Graham, Ky., all to include manual training units and each to cost approximately $150,000.

MANSFIELD, LA.—DeSoto Foundry & Machine Co., Ltd., operating a foundry and machine shop, will expand plant facilities, following recent capital increase.

NEW ORLEANS—New Orleans Public Service Co. plans to extend its power system and make improvements to its power plants that will cost over $1,000,000.

PONCA CITY, OKLA.—Clark Airplane Corp. will erect an airplane manufacturing plant here to produce a type of aircraft invented by Richard D. Clark, president.

SHAWNEE, OKLA.—R. F. Electrical Mfg. Co., Augusta, Kans., manufacturer of generators, has let contract to Cowen Bros. for construction of a 1-story, 40 x 80-foot plant building here. (Noted April 10.)

TULSA, OKLA.—River Hydroelectric Corp., W. E. Hudson, president, Sixtieth and Peoria streets, will begin work soon on the first of four concrete dams for a projected hydroelectric plant. Engineers are now making surveys.

JACKSON, TENN.—Capps Casket Co., recently incorporated with $50,000 capital will start work soon on a plant here for the manufacture of caskets and vaults. W. C. Capps and Ralph Budde are officers of the new company.

MEMPHIS, TENN.—Smith Motor Coach Co., Front and Washington avenues, will award contract on a plant for the manufacture of bus bodies at 222 Washington avenue. Unit will be 87 x 175 feet and will cost approximately $100,000, according to plans held by Jones & Furbringer, architects, Porter building, here. Frederick Smith is president of the company.

BORGER, TEX. — Phillips Pipe Line Co., which recently announced construction of a gas pipeline from the Panhandle fields to several northern cities, will build a machine shop here.

DALLAS, TEX. — J. C. Williamson, 1901 Grand avenue, and H. O. Wood, are organizing a company to manufacture electrically-lighted lawn sprinklers.

FORT WORTH, TEX.—Gulf Coast Airways, Roosevelt hotel, New Orleans, has established headquarters here and will erect an airport project to include hangars and other units.

HOUSTON, TEX.—Gulf Pipe Line Co., Gulf building, C. M. Rosebrough, chief engineer in charge of construction, will build a large pump station in the Darst creek field for its 8-inch pipe line built from there to Sour Lake.

SAN ANTONIO, TEX.—Edward Friedrich Mfg. Co., 1100 East Commerce street, was recently awarded a building permit for a plant addition to cost about $35,000. Approximately 50,000 square feet of floor space will be added. Company manufactures refrigerators and other store and club equipment.

SEGUIN, TEX.—Sumner Sollitt Co., National Bank of Commerce building, San Antonio, Tex., has contract for additions to power plants and construction of three hydroelectric power dams on the Guadalupe river near here for the Texas Hydroelectric Corp.

PULASKI, VA.——Unit of sintering plant of Pulaski Iron Co. was recently damaged by fire.

West Central

MARSHALLTOWN, IOWA—Apex Regulator Co., subsidiary of the Fisher Governor Co., has let contract for a 60 x 125-foot plant building. It is expected that manufacturing activities will commence by July 15.

WATERLOO, IOWA—Deere & Co., manufacturer of agricultural implements, has awarded contract for a 1-story, 160 x 240-foot manufacturing plant for the production of wheels, to Jens Oleson Construction Co., 1522 Lafayette street, at a cost approximating $125,000.

EL DORADO, KANS.—Skelly Oil Co., refining division, will build an oil pipe line from here to the Voshell oil field, McPherson county, Kans. A pump station will be erected at the oil field terminus of the line. H. A. Miller is purchasing agent, here.

HOXIE, KANS.—Central Kansas Power Co., Abilene, Kans., will build an addition to its power plant here.

DULUTH—E. S. Gustafson, commissioner, city hall, is understood to have plans through W. J. Sullivan, architect, 408 Palladio building, for shop buliding, hangar and other units to be built here at Williamson-Johnson airport.

MANKATO, MINN.—Graver Tank & Mfg. Co., East Chicago, Ind., has the contract from the Chicago, St. Paul, Minneapolis & Omaha railroad to build a 35,000-gallon per hour water softening plant here.

Western States

BAGGETT, CALIF.—Western Borax Co., 417 Hill street, Los Angeles, is to build two plant units here and six 1000-barrel steel tanks, contract for which has been let to the Consolidated Steel Corp., 1200 North Main street, Los Angeles.

LOS ANGELES—Wilhite Machine & Auto Works, 1245 South Hope street, plans a 2-story plant costing about $50,000 at Main and Twenty-eighth streets. Unit will be used to make lighting fixtures.

MODESTO, CALIF.—Stanislaus Co. will build a 2-story power house costing about $30,000 at county hospital here. Plans are by R. G. DeLapp, 1710 Franklin street, Oakland, Calif.

DENVER—Chicago, Burlington & Quincy railroad will build an addition to its engine house here and will purchase repair equipment. Bids are being received by the railroad at 547 West Jackson boulevard, Chicago.

PAONIA, COLO.—Oliver Power Co., Delta, Colo., has permit from village to erect a power plant here.

Canada

ARNPRIOR, ONT.—Woodworking plant here belonging to Stafford R. Rudd was recently damaged by fire.

(*Concluded on Page* 116)

Pipe and Tube Prices—Plate Extras

Steel Pipe

(Base price $200 per ton)

Pittsburgh and Lorain basing discounts, jobber's carloads.

Evanston, Ill., and Indiana Harbor, Ind., take differential 2 points less discount.

Chicago takes differential 2 points less than Pittsburgh-Lorain basis.

Butt Weld

	Black	Galvanized
⅛-inch	47	21½
¼ and ⅜-inch	53	27½
½-inch	58	44½
¾-inch	62	50½
1 to 3-inch	64	52½

Lap Weld

2-inch	57	43½
2½ to 6-inch	61	49½
7 to 8-inch	58	45½
9 and 10-inch	56	43½
11 and 12-inch	55	42½

REAMED AND DRIFTED

Butt Weld

1 to 3-inch	62	50½

Lap Weld

2-inch	55	43½
2½ to 6-inch	59	47½

EXTRA STRONG—PLAIN ENDS

Butt Weld

⅛-inch	43	26½
¼ and ⅜-inch	49	32½
½-inch	55	44½
¾-inch	60	49½
1 to 1½-inch	62	51½
2 to 3-inch	63	52½

Lap Weld

2-inch	55	44½
2½ to 4-inch	59	48½
4½ to 6-inch	58	47½
7 to 8-inch	54	41½
9 and 10-inch	47	34½
11 and 12-inch	46	33½

DOUBLE EXTRA STRONG

Butt Weld

½-inch	44	34½
¾ to 1½-inch	47	37½
2 to 2½-inch	49	39½

To large jobbers these discounts are increased by 1 point and two supplementary discounts of 5 per cent on black, and 1½ points and two supplementary discounts of 5 per cent on galvanized.

Wrought Iron Pipe

Pittsburgh basing discounts, jobbers' carloads. Individual quotations made on delivered basis.

THREADS AND COUPLINGS

Butt Weld

	Black	Galv.
¼ and ⅜-inch	+11	+36
½-inch	23	5
¾-inch	28	11
1 and 1¼-inch	31	15
1½ and 2-inch	35	18

Lap Weld

1¼ and 1½-inch	Upon application	
2-inch	23	9
2½ to 3½-inch	28	12
4 to 6-inch	30	17
7 and 8-inch	29	16
9 to 12-inch	26	11

REAMED AND DRIFTED

2-inch to 6-inch—Two points less than above

EXTRA STRONG, PLAIN ENDS

¼ and ⅜-inch	+13	+48
½-inch	23	7
¾-inch	28	12
1 to 2-inch	34	18

Lap Weld

2-inch	29	13
2½ to 4-inch	34	20
4½ to 6-inch	33	19
7 and 8-inch	31	17
9 to 12-inch	21	8

DOUBLE EXTRA STRONG

Butt Weld

½-inch	+47½	+59½
¾-inch	+28	+40
1-inch	+34	+46
1¼-inch	+28	+40
1½-inch	+27	+39

Lap Weld

2 and 2½-inch	+13	+25
3 to 4-inch	+ 8	+17
4½ to 6-inch	+ 9	+18
8-inch	+12	.....

Jobbers obtain additional preferential discounts of 1, 5 and 2½ on black and galvanized wrought iron pipe.

On extra or double extra strong pipe fitted with threads and couplings basing discount lowered 5 points from plain end price. Fitted with threads only, basing discount lowered 3 points for random lengths.

Boiler Tubes

Pittsburgh carload discounts

STEEL (Lap Weld)

2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ to 3¾-inch	54 off
4-inch	57 off
4½ to 6-inch	46 off

Subject to two 5 per cent discounts on full carload shipments. On less than 10,000 pounds, base discount reduced 6 points and one 5 per cent allowed. Over 10,000 pounds to carload, base discount reduced 4 points and two 5 per cents allowed.

CHARCOAL IRON

1½-inch	1 off
1¾-inch	8 off
2 and 2¼-inch	13 off
2½ and 2¾-inch	16 off
3-inch	17 off
3¼ to 3½-inch	18 off
4-inch	20 off
4½-inch	21 off

Subject to 10 per cent discount on full carload lots. On less than 10,000 pounds, base discounts reduced 2 points and no preferential allowed. On 10,000 pounds to carload, 5 per cent preferential allowed.

SEAMLESS COLD DRAWN

1-inch	61 off
1¼ and 1½-inch	53 off
1¾-inch	37 off
2 and 2¼-inch	32 off
2½ and 2¾-inch	40 off
3-inch	46 off
3¼ and 3½-inch	48 off
4-inch	51 off
4½, 5 and 6-inch	40 off

SEAMLESS HOT ROLLED

1¾-inch	37 off
2 and 2¼-inch	38 off
2½ and 2¾-inch	46 off
3-inch	52 off
3¼ and 3½-inch	54 off
4-inch	57 off
4½, 5 and 6-inch	46 off

Subject to 5 per cent supplementary discount for carload lots. On less than 10,000 pounds, base discount reduced 6 points. On 10,000 pounds to carload, base discount reduced 4 points and one 5 per cent allowed.

SEAMLESS STEEL MERCHANT BOILER TUBES

Extras:

Add 5 per cent for lengths over 24 feet and not over 26 feet.

Smaller tubes than 1-inch and lighter than standard gage to be sold at mechanical tubing list and discount.

Intermediate sizes and gages not listed above take price of next larger outside diameter and heavier gage.

SEAMLESS STEEL MECHANICAL TUBING

Base Discounts on New List July 1, 1925

Carbon 0.10 to 0.30 per cent.....55 to 55 off
Carbon 0.30 to 0.40 per cent.....45 to 50 off

Plus usual extras for forming and for long lengths over 18 feet and for commercially exact lengths.

SEAMLESS STEEL LOCOMOTIVE AND SUPERHEATER TUBES

Outside diameter	Gage	Net price per foot f.o.b. Pittsburgh Price
2-inch	12-gage	14¼c
2-inch	11-gage	15c
2-inch	10-gage	16c
2¼-inch	12-gage	16c
2¼-inch	11-gage	17c
2¼-inch	10-gage	18c
3-inch	7-gage	33c
5⅜-inch	9-gage	50c
5½-inch	9-gage	52c

Plus usual extras for forming and for lengths over 24 feet.

Plate Extras

BASE

Rectangular plates, tank steel or conforming to manufacturers' Standard Specifications for structural steel, date Nov. 24, 1922, or equivalent, ¼-inch thick and over on thinnest edge (except for ¼-inch or 72 inches wide when ordered to weight in pounds per square foot—see width and gage extras), 100 inches wide and under, down to but not including 6 inches wide, 5 feet 0 inch long up to published limit in length but not over 80 feet 0 inch, are base. Extras per pound for width or diameter.

All Plates Rectangular or Otherwise

¼-inch thick and heavier, but not less than 11 pounds per square foot, if ordered to weight.

Over 100 to and including 110 inches	.05c
Over 110 to and including 115 inches	.10c
Over 115 to and including 120 inches	.15c
Over 120 to and including 125 inches	.25c
Over 125 to and including 128 inches	.50c

Plates less than ¼-inch or lighter than 11 pounds per square foot.

Over 72 to and including 84 inches	.10c
Over 84 to and including 96 inches	.20c
Over 96 to and including 100 inches	.30c

Over 100 inches add .35c to width extras for plates ¼-inch thick and heavier.

GAGE

Plates Not Exceeding 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 10.2 pounds per square foot, to and including 7.65 pounds square foot..... .20c

Plates Over 72 Inches Wide

Plates less than ¼-inch gage, to and including 3/16-inch; or lighter than 11 pounds per square foot to but not including 7.65 pounds square foot.... .20c
Plates ordered 7.65 pounds square foot .30c

QUALITIES

Pressing steel	.10c
Flange steel (boiler grade)	.15c
Ordinary firebox steel	.20c
Stillbottom steel	.30c
Locomotive firebox steel	.50c
Marine steel	1.50c
Hull materials subject to U. S. Navy Dept. specifications for medium or soft steel	.10c
High tensile hull steel subject to U. S. navy department or equivalent specifications	1.00c
Boiler steel subject to U. S. navy department specifications, class A-B....	1.50c
Hull plates to hull specifications, required to stand cold flanging, take extra for flange steel.	

Floor Plates

Floor plates are furnished only as rectangular plates in stock steel grade. No physical tests will be made on floor plates.

INSPECTION

Mill inspection .....No extra

Charges for other inspection, such as Lloyd's or American bureau of shipping, will be made by inspection bureau direct to buyer.

CUTTING

LENGTH OR DIAMETER

All Plates, Rectangular or Otherwise

Three feet and over up to published limit of length, but not over 80 feet.....No extra

Under 3 feet to 2 feet inclusive	.25c
Under 2 feet to 1 foot inclusive	.50c
Under 1 foot	1.55c
Over 80 feet to 100 feet inclusive	.25c

Over 100 feet add .25c plus .05c for every additional 2 feet or fraction thereof.

Regular Sketches

With not more than four straight cuts (Including straight taper plates)
Additional extra ..... .20c

Irregular Sketches

With not more than four straight cuts. (Sketches cannot be sheared with reentrant angles)
Additional extra ..... .50c

Construction and Enterprise

(*Concluded from Page* 114)

CHIPPEWA, ONT.—Norton Co., J. B. Glaze manager, Niagara Falls, N. Y., advises that plant and manufacturing activities at the latter address are being transferred here. Office, semicommercial, storage and laboratory units are being built by the Smith Bros. Construction Co. Ltd. Present office building here is being altered into a chemical laboratory, also. No equipment needs are anticipated. (Noted June 5.)

LONDON, ONT.—Jones Box & Label Co., Dundas street, has awarded contract to the Fleet Construction Co., Toronto, Ont., for a plant addition to cost approximately $60,000. Equipment will include box-making machinery to be purchased.

WALKERVILLE, ONT.—Plants of the Universal Fastener & Button Co. and the Dominion Specialties Corp. were virtually destroyed recently by explosion and fire. Part of the pattern room of Viking Pump Co. was also damaged, according to advice from the latter company. Total fire loss among three companies was over $250,000.

EAST MONTREAL, QUE.—Kendall Bros. Ltd., 1853 Iberville street, has contract for excavation work in connection with a $2,000,000 refinery to be erected here for the Canadian Copper Refiners Ltd., Montreal, Que.

MONTREAL, QUE.—Dominion Bridge Co. is completing arrangements to reopen the National Bridge plant here, that has been idle for the last fifteen years. The proposed plans of the company are made necessary owing to the general expansion of business. It is understood that the plant will be re-equipped and used for the production of the lighter class of materials and in addition some new lines will be added.

ST. HENRI, QUE.—Canadian Foundry Supplies & Equipment Co. Ltd., 185 Wellington street, Montreal, Que., has let general contract to Church, Ross Co. Ltd., for a manufacturing plant, office and garage on Richelieu street to cost $110,000. T. Pringle & Son Ltd., 410 St. Nicholas street, are engineers.

Recent Incorporations

SAN DIEGO, CALIF.—Universal Brass Mfg. Co. Ltd. has been incorporated with 100 no par shares by C. G. Glauber, 619 East Eighth street.

CHICAGO—Communication Equipment & Engineering Co. has been incorporated with 500 no par shares by Robert H. Farrell, 180 North Wells street, to deal in machinery.

CHICAGO—Mechanical Development Co. has been incorporated with $100,000 capital by Colby, Meyer, Brigsall & Ritman, 33 North LaSalle street, to develop mechanical devices.

CHICAGO—Morrison Mfg. Co. has been incorporated with $50,000 capital by Victor N. Winnen, 809 West Madison street, to engage in a general machine shop business.

CHICAGO—Heinze Machine Co. has been incorporated with $100,000 capital by John E. Van Natta, 127 North Dearborn street, to engage in general machine work.

CHICAGO—Electro-Acoustic Products Co. has been incorporated with 1000 no par shares by Gorman, Schmidt & McGrath, 30 North LaSalle street, to manufacture and deal in electric acoustic and moving picture appliances and equipment.

YATES CITY, ILL.—Yates City Implement Co. has been incorporated with $10,000 capital by the John Deere Plow Co., Moline, Ill., to deal in machinery, implements, tools and mechanical devices.

LAFAYETTE, IND.—Peerless Wire Goods Co. Inc. has been incorporated with $200,000 capital stock by Ernest H. Schilling and Edwin R. Clegg, to purchase raw materials for the manufacture of wire, iron and steel goods.

LIGONIER, IND.—Allmetal Bridge & Culvert Corp. has been incorporated with $100,000 capital and 1000 no par shares by I. W. Cohler and M. L. Joseph, to manufacture and build bridges and culverts and their component parts.

SIOUX CITY, IOWA—Modern Machine Works has been incorporated with $10,000 capital by Forest O. Yockey and Ira D. Fry.

BOSTON—Barnes & Jones Inc. has been incorporated with $100,000 capital by Walter E. Barnes, 7 Woodlawn avenue, Wellesley, Mass., to manufacture plumbing and heating devices.

LYNN, MASS.—Electro Heat Corp. has been incorporated with 5000 no par shares by William H. White and Joseph L. Powers, to carry on a general manufacturing business.

SPRINGFIELD, MASS. — Springfield State Building Corp. has been incorporated with 5000 no par shares by Sidney R. Cook and Charles R. Meyrick, to engage in a construction and building business.

SHORT HILLS, N. J.—Missner Inventions Inc. has been incorporated with 1000 common shares by Riker & Riker, attorneys, 24 Commerce street, Newark, N. J., to manufacture machinery.

New Trade Publications

ABRASIVES—Norton Co., Worcester, Mass., in a recent booklet treats of pulpstones as a factor in pulp production.

WELDER—Micro Products Co., Peoria, Ill., in a current bulletin shows in detail its heavy duty welder for butt and spot welding. It is of light weight and may be used on a truck or bench.

CONVEYOR CHAIN—Transue & Williams Steel Forging Corp., Alliance, O., has issued a bulletin on its forged industrial conveyor chain. Illustrations show the forged links and assembled chain and engineering data are given.

ALLOYS—Niagara Falls Smelting & Refining Co., Buffalo, is distributing the second edition of its handbook for foundrymen. It is designed to inform the foundryman as to the use of alloying materials to attain certain results in his castings.

CONCRETE REINFORCEMENT—Rail Steel Bar association, Builders building, Chicago, has issued a bulletin calling attention to the identifying mark rolled upon all bars produced by its members. This is a certificate of quality of the steel in the bars.

LOCOMOTIVE CRANES—Industrial Brownhoist Corp., Cleveland, describes its gas and diesel-powered locomotive cranes of 10 to 40 tons capacity. Illustrations show the cranes in action in a large number of applications. A detail diagram shows the parts and tables cover capacities and clearance dimensions.

INDUSTRIAL FURNACES—Hyro Mfg. Co. Inc., New York, manufacturer of hardware specialties, has issued a bulletin on its automatic industrial furnace. It describes a pot furnace of late design, for case hardening by cyanide and other salts and heat treating. Illustrations and diagrams show details and accessories.

WATER SCREENS—Link-Belt Co., Chicago, has compiled a booklet on its 1930 model traveling water screen for clearing intake water of debris detrimental to operation of condensers and pumps. Illustrations present cross sections of the complete screen and its cleansing devices and a large number of installations.

MILLING MACHINES—Kearney & Trecker Corp., Milwaukee, tells the story of its milling machines in mass production in the automotive industry. It is presented in an illustrated booklet which shows application of milling methods to numerous production operations in automobile manufacture.

ELECTRIC BRUSHES—A series of 12 advertisements of the National Carbon Co. Inc., Cleveland, forms the basis of a booklet telling what is behind the trademark of the company's brushes. Illustrations show the various steps of manufacture and describes the steps in production of raw material and completed product.

DIE BLOCKS—Heppenstall Co., Pittsburgh, features its die blocks in a current bulletin, giving reasons for long life and increased production between sinkings. It is illustrated and contains color charts for various degrees of heat. It covers forging practice, chemical cmoposition and physical property values and metallurgial engineering data. Reference tables cover much of value to the engineer.

AIR COMPRESSORS—Portable air compressors manufactured by the Sullivan Machinery Co., Chicago, form the subject matter of a catalog by that company, just issued. It describes the company's line of portable gasoline engine driven compressors. A new unit has been added to the line, of 66 feet capacity. Details and dimensions of the machines are given. Numerous illustrations show these compressors in use in various ways.

PUMPS—James T. Castle, merchant engineer, Pittsburgh, is distributing a catalog of the Peerless Pump Co., Los Angeles, describing its deep well turbine pumps for 6 to 18-inch diameter wells or larger, of 30 to 7000 gallons per minute capacity for wells of any practical depth. Illustrations show details of the pumps and diagrams cover further information. Tables show friction of water in pipes and flow of water in concrete pipes.